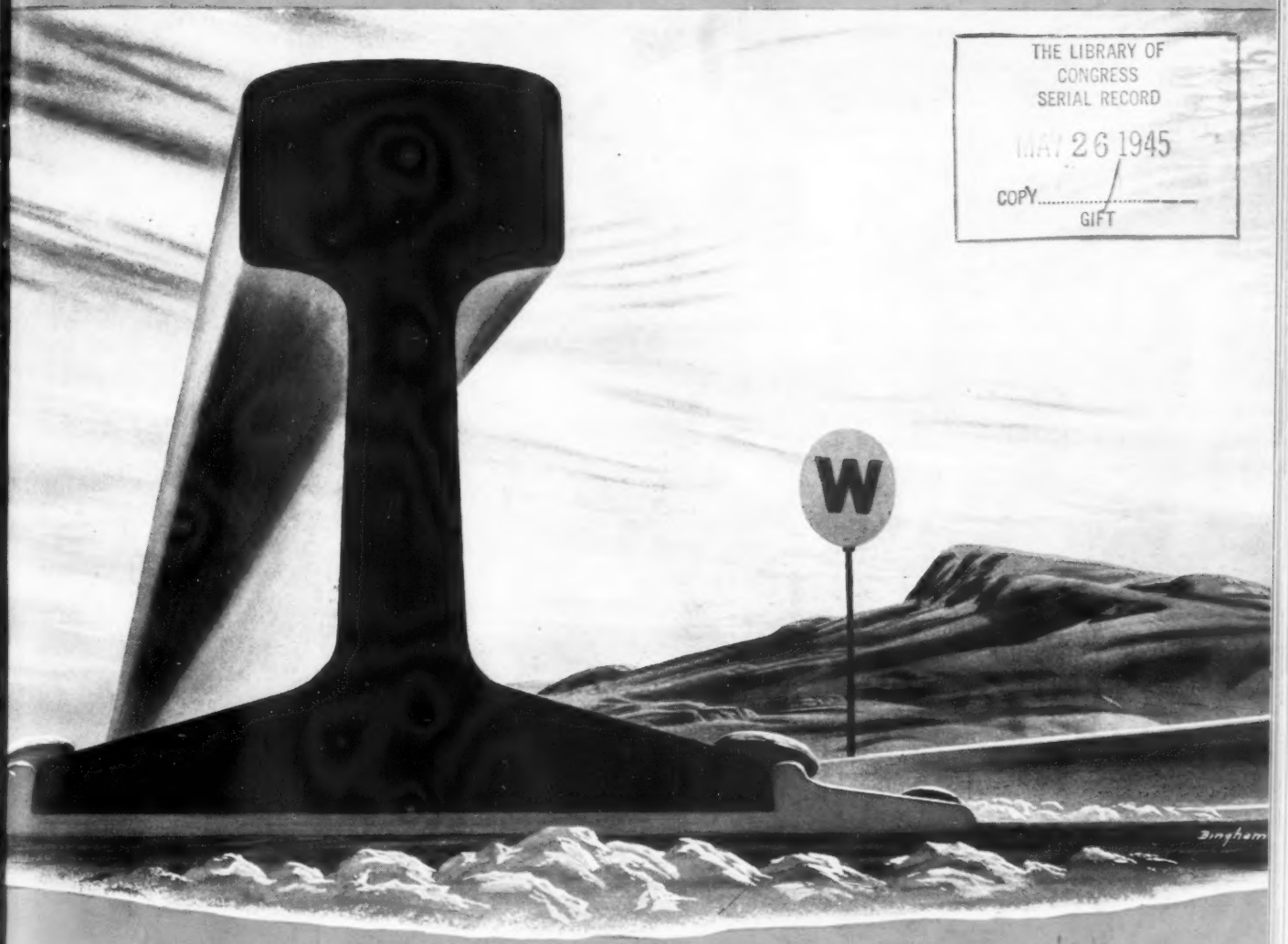
MAY 19, 1945

Railway Age

Founded in 1856

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"HIGH IRON"

"High Iron" is one of America's not-so-secret weapons. It is a railroadman's term for the 230,000 miles of mainline track — built, paid for and kept up by the railroads — which knit America together. ● Over these strong highways of steel moves America's might — three quarters of all intercity transportation, 90% of all war freight. ● In this mass movement of freight — a movement that far exceeds anything moved before by any means of transport — lies a vital lesson. ● The lesson is this: America needs and must have — for success in war, for prosperity in peace — the low-priced, mass transportation which only railroads can deliver.



ASSOCIATION OF
AMERICAN RAILROADS
ALL UNITED FOR VICTORY

"Buffalo Master"

BRAKE SHOE KEY

Approved by A. A. R. as an Alternate Standard



The first spring brake shoe key designed and marketed.

In service since 1932 on all classes of railroad equipment.

Hooked head permits removal in usual manner.

Full bearing on brake head lugs.

Safety lock: Stops chatter and vibration at the source.

Operates with lowest possible fiber stress, insuring long life.

Self locking.

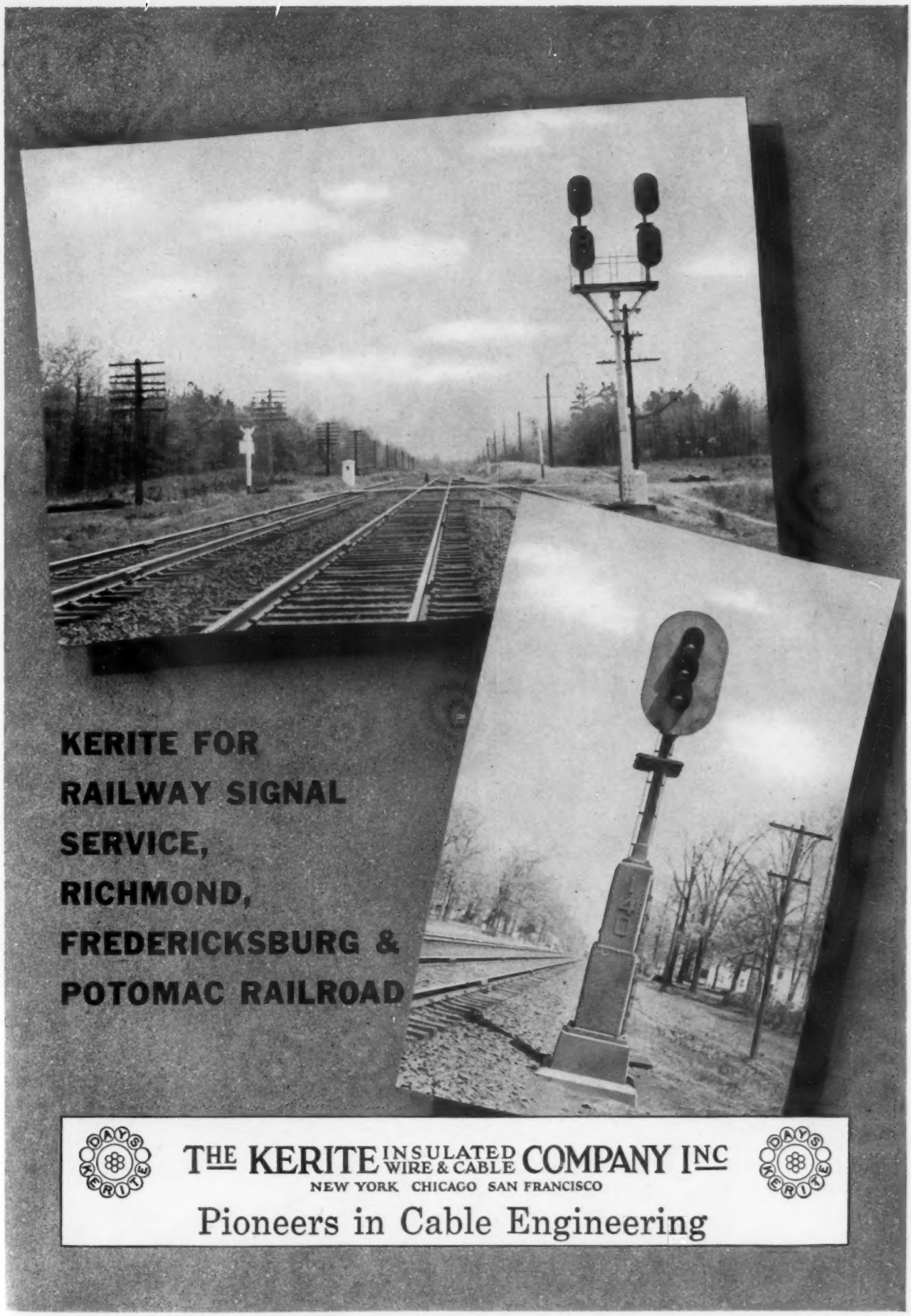
Full elliptic spring design, exclusive with this key necessary to accommodate the permissible tolerance in brake heads and brake shoes.

Prevents Worn Brake Heads Like This

BUFFALO BRAKE BEAM CO.

140 CEDAR STREET NEW YORK, N. Y.

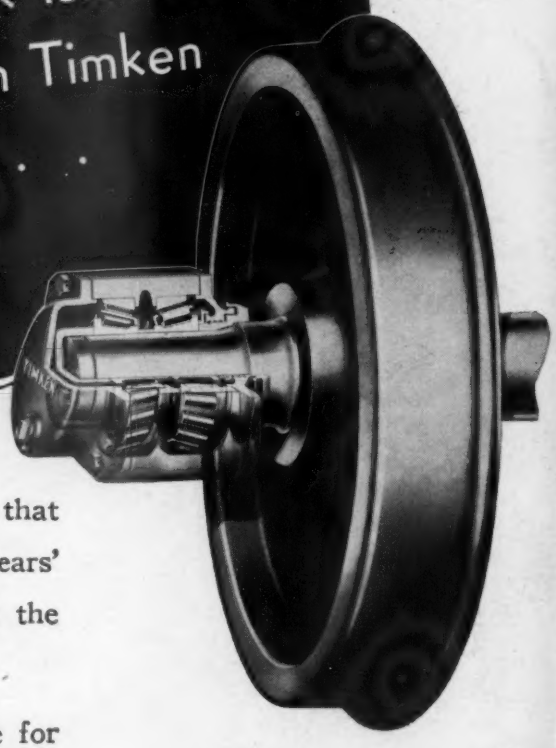
Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 118, No. 20.


KERITE FOR
RAILWAY SIGNAL
SERVICE,
RICHMOND,
FREDERICKSBURG &
POTOMAC RAILROAD
DAYS KERITE
THE KERITE INSULATED WIRE & CABLE COMPANY INC
NEW YORK CHICAGO SAN FRANCISCO
Pioneers in Cable Engineering
DAYS KERITE

new *Aluminum* box cars go on

TIMKEN BEARINGS!

Five Aluminum box cars now under construction for the Rock Island Lines are being equipped with Timken Roller Bearings . . . .



The type of bearing mounting selected for these cars is the same as the mounting that has proved so successful in over five years' service under ten high-speed box cars on the Union Pacific R. R.

Timken Roller Bearings now are available for all types of new high-speed freight car trucks.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

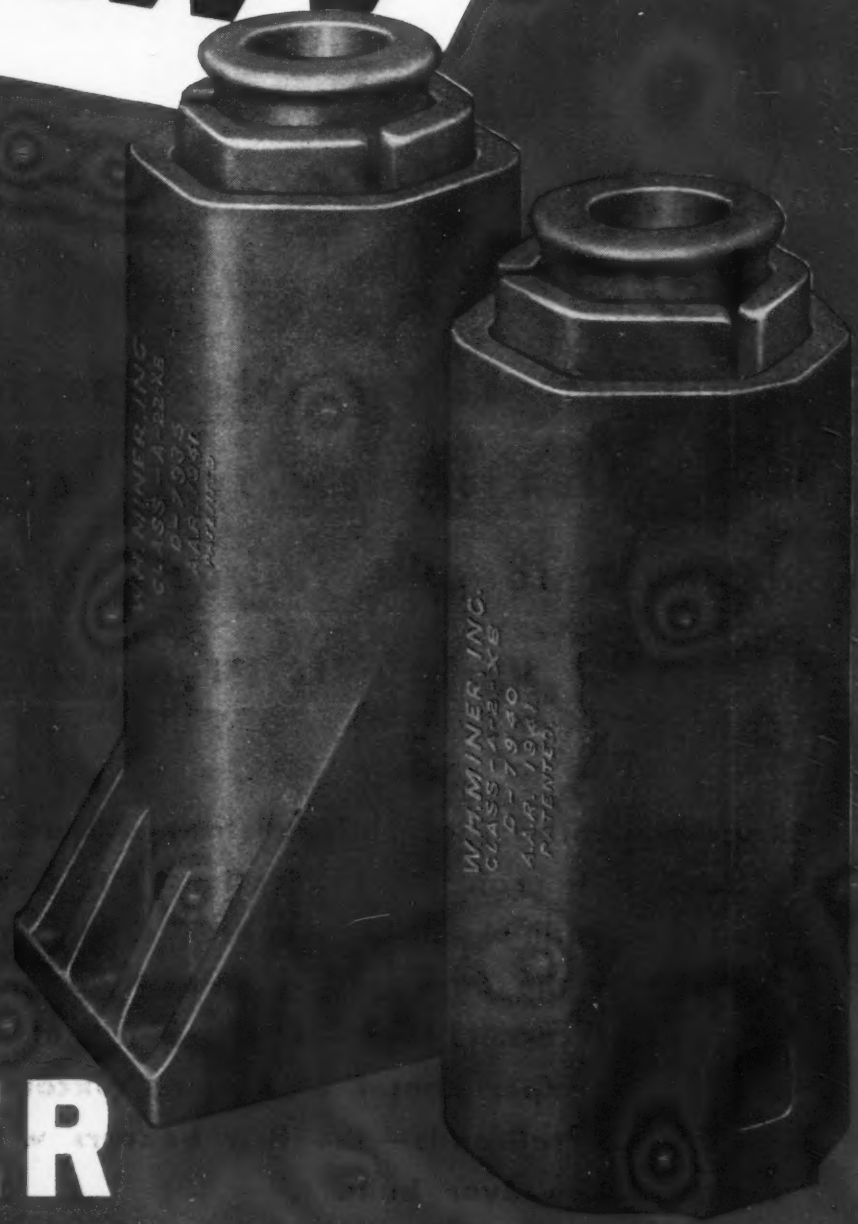
TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

RAILWAY ROLLER BEARINGS

!
MKEN
ROLLER BEARINGS

QUALITY



MINER

FRICTION DRAFT GEARS

POSITIVE IN ACTION

STURDY

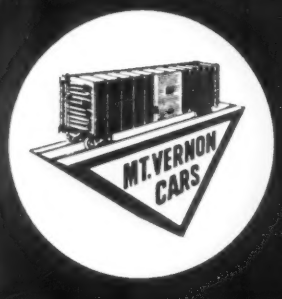
ABSOLUTELY RELIABLE

W. H. MINER, INC. CHICAGO

MT. VERNON
ALUMINUM
BOX CARS

Again Mt. Vernon takes the lead in the production of new types of equipment designed to give railroads the benefit of the most up-to-date transportation.

Keeping abreast of the constant demand for increased efficiency in railroad operation, Mt. Vernon engineers are cooperating with the railroads and materials manufacturers in the development of new designs and materials for freight cars. Typical of this spirit of cooperation are the thirty experimental aluminum boxcars built for three midwestern railroads—the first boxcars with all-aluminum superstructure ever built.



MT. VERNON

MT. VERNON,

Div. of **H. K. PORTER**

PITTSBURGH 22.

Factories: Mt. Vernon, Ill. • Pittsburgh, Pa. • Blairsville, Pa.

N
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PENNS
McKeesport


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for three
aluminum
VERNON
MT. VERNON
of H. K. PORTER
TTSBURGH 22
ttsburgh, Pa. • Blairsville, Pa



Mt. Vernon's **ADAPTABLE FACILITIES were chosen to build the first all-aluminum-body boxcars.**

CAR MFG. CO.

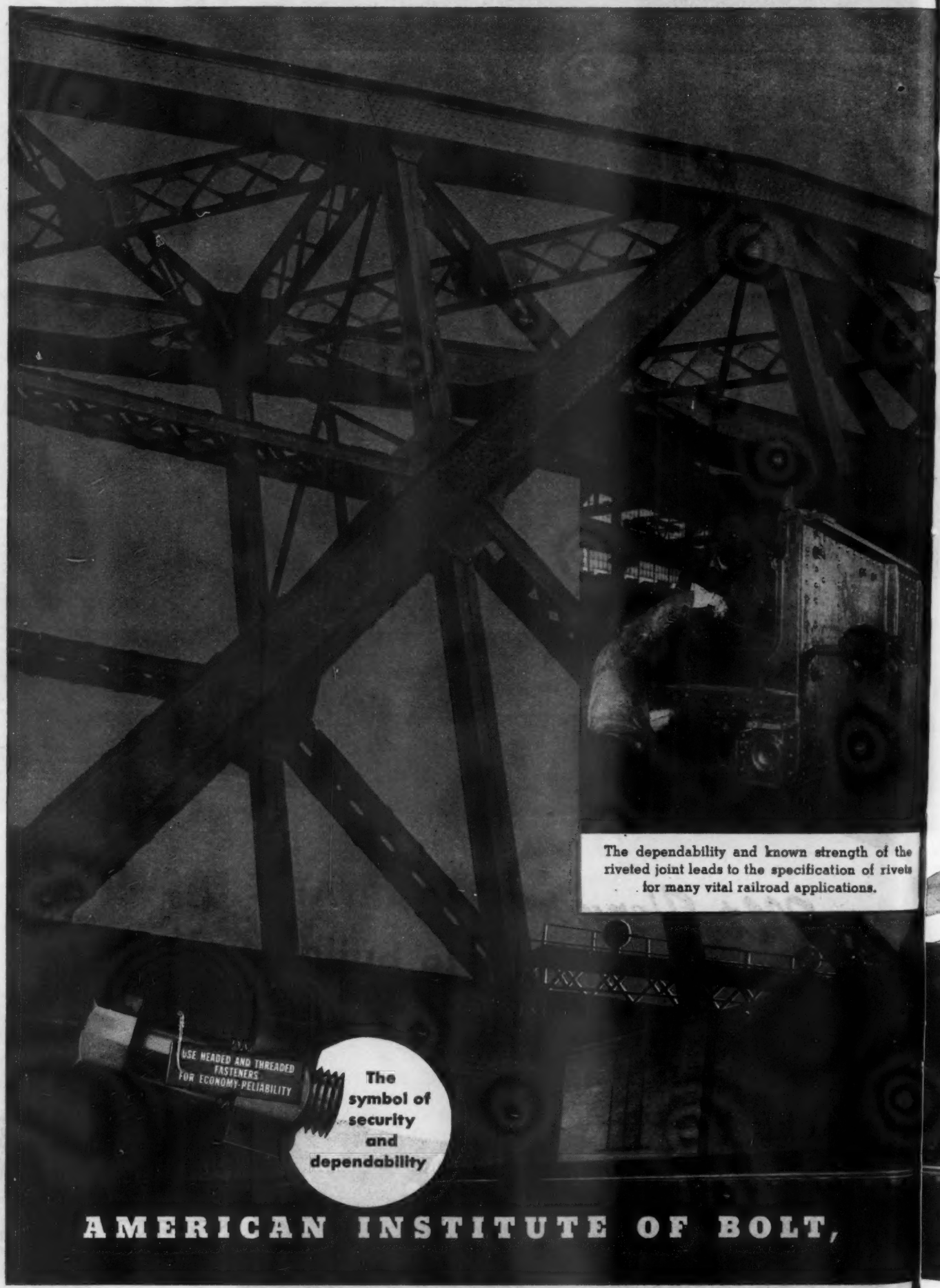
ILLINOIS

COMPANY, Inc.

PENNSYLVANIA

McKeesport, Pa. • Newark, N.J. • New Brunswick, N.J.

PORTER
"Better Built"
Equipment
Established 1866



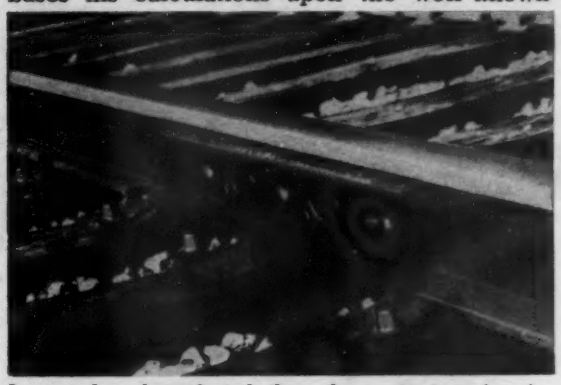
The dependability and known strength of the riveted joint leads to the specification of rivets for many vital railroad applications.

Where Safety is Vital

RAILROADS USE FASTENERS

NUTS BOLTS SCREWS RIVETS

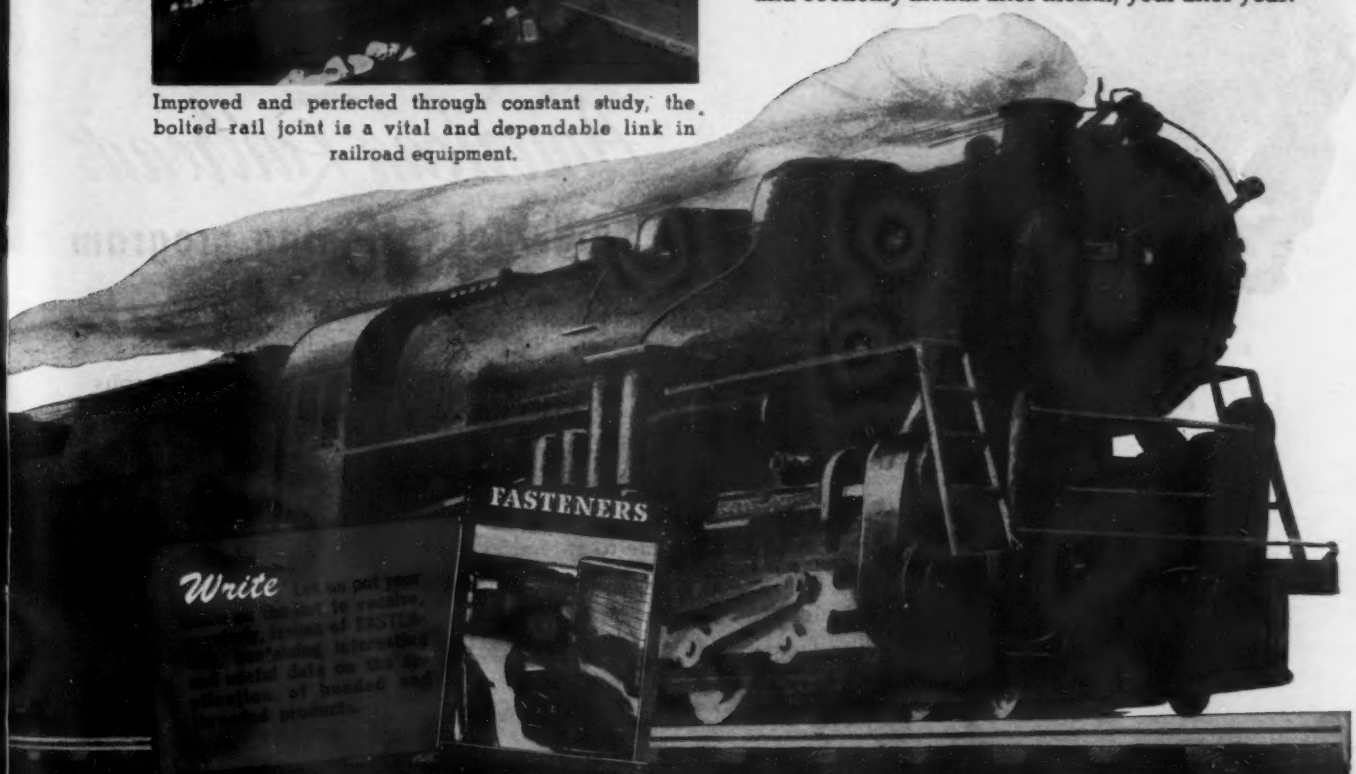
Because they can safely depend upon the known strength of bolted and riveted joints, designers and builders of railroad equipment rightfully place confidence in FASTENERS. There need be no fear of unexpected weaknesses developing when a competent design engineer bases his calculations upon the well-known and time-proved factual data that is available on these joints.



Improved and perfected through constant study, the bolted rail joint is a vital and dependable link in railroad equipment.

Designers and manufacturers of appliances, machinery and equipment of all types have learned to depend fully upon fasteners for security and economy. Made by modern manufacturing methods, fasteners are available everywhere in a great variety of styles, sizes and materials to suit individual needs.

When you use modern bolts, rivets or screws for your products, you follow the example of an industry—the Railroads—that deals in safety and economy month after month, year after year.

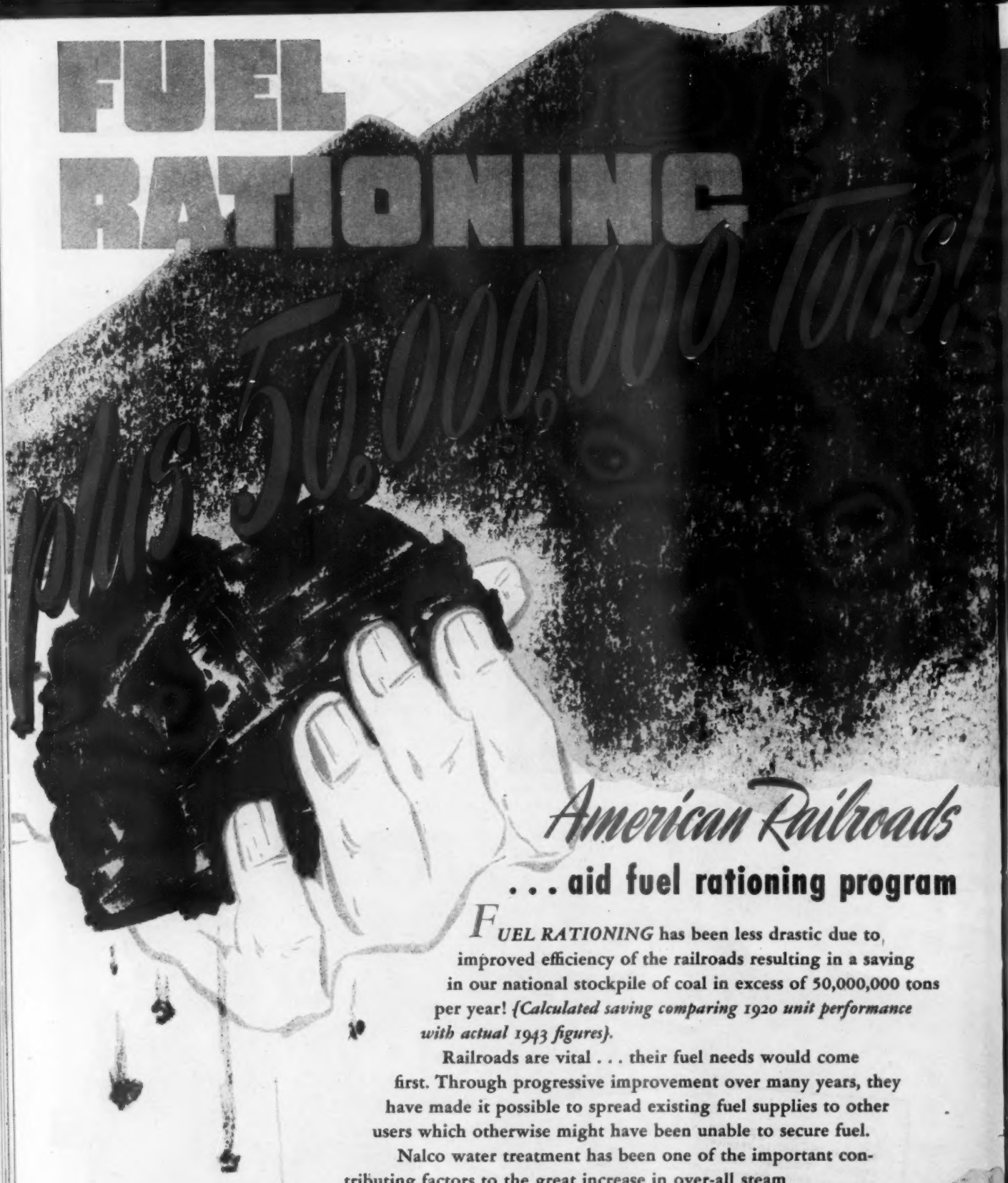


NUT AND RIVET MANUFACTURERS

1550 HANNA BUILDING · CLEVELAND 15, OHIO

FUEL RATIONING

plus 50,000,000 Tons!



American Railroads
. . . aid fuel rationing program

FUEL RATIONING has been less drastic due to improved efficiency of the railroads resulting in a saving in our national stockpile of coal in excess of 50,000,000 tons per year! *(Calculated saving comparing 1920 unit performance with actual 1943 figures).*

Railroads are vital . . . their fuel needs would come first. Through progressive improvement over many years, they have made it possible to spread existing fuel supplies to other users which otherwise might have been unable to secure fuel.

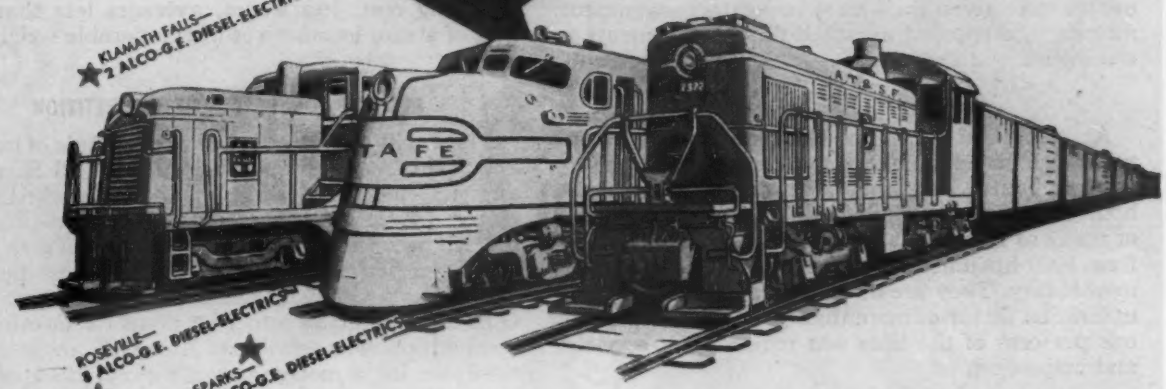
Nalco water treatment has been one of the important contributing factors to the great increase in over-all steam locomotive efficiency, availability, and performance.

NATIONAL ALUMINATE CORPORATION
6216 W. 66th Place • Chicago 38, Illinois
PAIGE-JONES CHEMICAL COMPANY
Canadian inquiries should be addressed to Aluminate Chemicals, Ltd., 555 Eastern Avenue, Toronto, Ontario

Nalco
—System of Water Treatment

AS THE WAR MOVES WEST

Alco-G.E. diesel-electrics 168 of them are helping Western roads to get their second wind



SEATTLE—
2 ALCO-G.E. DIESEL-ELECTRICS

TACOMA—
2 ALCO-G.E. DIESEL-ELECTRICS

SPOKANE—
1 ALCO-G.E. DIESEL-ELECTRIC

PORTLAND—
30 ALCO-G.E. DIESEL-ELECTRICS

BROOKLYN—
2 ALCO-G.E. DIESEL-ELECTRICS

EUGENE—
5 ALCO-G.E. DIESEL-ELECTRICS

KLAMATH FALLS—
2 ALCO-G.E. DIESEL-ELECTRICS

ROSEVILLE—
9 ALCO-G.E. DIESEL-ELECTRICS

SPARKS—
4 ALCO-G.E. DIESEL-ELECTRICS

OAKLAND—
20 ALCO-G.E. DIESEL-ELECTRICS

STOCKTON—
10 ALCO-G.E. DIESEL-ELECTRICS

SAN FRANCISCO—
17 ALCO-G.E. DIESEL-ELECTRICS

FRESNO—
7 ALCO-G.E. DIESEL-ELECTRICS

BAKERSFIELD—
2 ALCO-G.E. DIESEL-ELECTRICS

MOHAVE—
2 ALCO-G.E. DIESEL-ELECTRICS

BARSTOW—
7 ALCO-G.E. DIESEL-ELECTRICS

LOS ANGELES—12 ALCO-G.E. DIESEL-ELECTRICS

LONG BEACH—1 ALCO-G.E. DIESEL-ELECTRIC

NEEDLES—
3 ALCO-G.E. DIESEL-ELECTRICS

SAN BERNARDINO—
10 ALCO-G.E. DIESEL-ELECTRICS

SAN DIEGO—
2 ALCO-G.E. DIESEL-ELECTRIC

YUMA—
2 ALCO-G.E. DIESEL-ELECTRICS

GILA—
3 ALCO-G.E. DIESEL-ELECTRICS

TUCSON—
2 ALCO-G.E. DIESEL-ELECTRICS

EL PASO—
2 ALCO-G.E. DIESEL-ELECTRICS

The accelerated time table of the Pacific war theatre piles additional demands on west coast yards and terminals, which have long been working at near capacity. On 20 to 24-hour daily assignments, 168 Alco-G.E. diesel-electrics are providing the locomotive-hours needed to meet the exacting shipping schedules required by the final drive on Japan.

Alco GE

90% "USE-ABILITY"

That's why Alco-G.E. diesel-electrics enable west coast yards to keep pace with the war in the Pacific



WHEN the center of war interest shifted from east to west—Pacific seaboard yards and terminals were given their most important assignment: meeting the speeded-up schedules for shipments to the Pacific war theatre.

WORKING 3 TRICKS A DAY

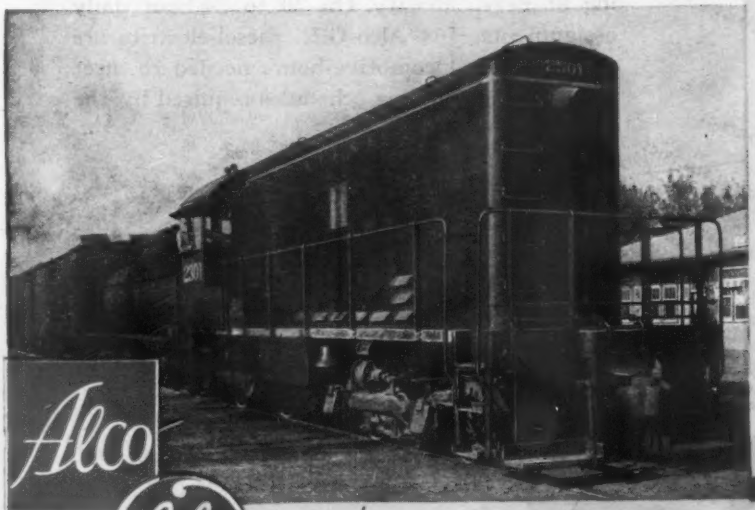
At this vital job, Alco-G.E. diesel-electrics are proving indispensable. Stopping only for fuel every third or fourth day, they are working three eight-hour tricks a day, switching and classifying trains of as many as 100 loaded cars. On one typical operation, four 1000-hp units are averaging 96.5 per cent in availability. They are at work 22.5 hours a day—a utilization factor of more than 93 per cent. Less than one per cent of the time was required for servicing and inspection.

SERVICED DURING LUNCH HOUR

A 380-hp (44-ton) unit at another location often works every hour of the day, handling trains of 20 to 22 loaded cars. Its daily servicing and inspection are completed during the lunch period, and its total operating cost, less wages, averages less than half that of steam locomotives of comparable weight.

PREPARE FOR PEACETIME COMPETITION

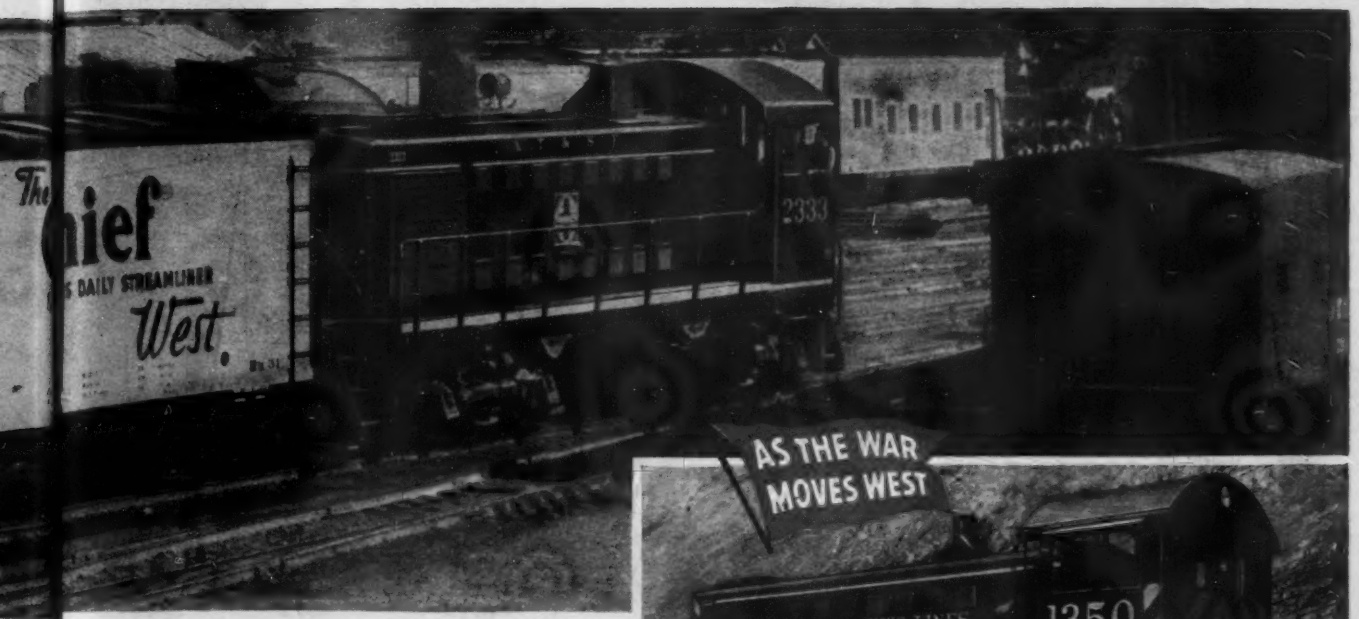
The Pacific seaboard is but one example of how the low maintenance requirement of Alco-G.E. diesel-electrics produces additional work-packed locomotive-hours which the railroads need so urgently to keep pace with the growing demands of war. Their ability to perform this service at low cost per ton-mile is the reason why you should incorporate Alco-G.E. diesel-electrics into your plans for meeting stiff competition. The services of Alco-G.E. engineers are available for a motive-power survey. Because they have all three types of motive power at their disposal—diesel-electric, electric, and steam—they can recommend the one which is economically best suited to your operations.



10-YEAR-OLD ALCO-G.E. UNIT—It often works 24 hours a day breaking up 75-car trains at the Santa Fe's Fresno yard. Since 1935, it has been available for work 80,000 hours, and its average maintenance cost during the entire period has been very low.

Alco GE

AMERICAN LOCOMOTIVE



1000-HP ALCO-G.E. diesel-electric switching refrigerator cars at San Bernardino, Cal.



4 ALCO-G.E. DIESEL-ELECTRICS RELEASE 6 STEAM ENGINES for Southern Pacific main-line service. Switching freight and passenger cars in the Sparks, Nevada, yards, these diesel-electrics are in service 24 hours a day, and need refueling—which takes but 30 minutes—only once every three days. Their only time out of service is a roundhouse check-up once a month.



PACIFIC ELECTRIC'S FIVE 44-TONNERS are doing a gallant job of keeping war supplies moving in the Los Angeles area. One unit, at San Bernardino, starts its day with a round trip into the mountains, works the rest of the day at switching, and at night makes another 60-mile round trip with a string of cars. Pacific Electric depends on these diesel-electrics day in and day out.



"SAN DIEGAN," crack streamliner of the Santa Fe, being "Y-ed" at San Diego for its return trip to Los Angeles. In addition to handling close-schedule passenger-train switching, this 44-ton diesel-electric does the industrial switching at San Diego. Its availability for work during three recent months averaged 97.7 per cent.

ALCO-G.E. FLEETS OPERATED BY RAILROADS SERVING THE WEST COAST

Alameda Belt Line	2
Los Angeles Junction Railway Co.	2
Southern Pacific Co.	78
Pacific Electric	5
State Belt Railroad of Cal.	4
Western Pacific	16
Northern Pacific Terminal	8
Spokane, Portland & Seattle	19
Union Pacific	19
Great Northern	15
Santa Fe	54
San Francisco & Napa Valley	3
Chicago, Milwaukee, St. Paul & Pacific	23
Canadian Pacific	10

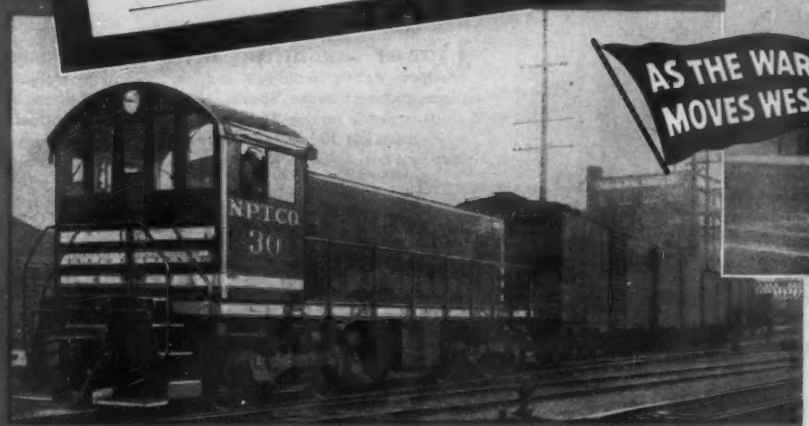
and GENERAL ELECTRIC

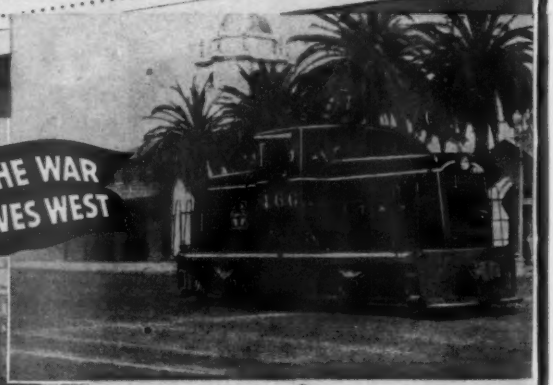
GENERAL SPECIFICATIONS

covering standard sizes of Alco-G.E. diesel-electrics

	380-HP SWITCHER	660-HP SWITCHER	1000-HP SWITCHER	1000-HP ROAD SWITCHER
Starting tractive effort (at 30% adhesion)	26,400 lb	59,700 lb	69,000 lb	69,000 lb
Engine	Two, 8-cyl	One, 6-cyl	One, 6-cyl Supercharged	One, 6-cyl Supercharged
Driving Motors	4	4	4	4
Maximum speed restriction	35 mph	60 mph	60 mph	60 mph
Driving wheels (number)	4 pairs	4 pairs	4 pairs	4 pairs
(diameter)	33 in.	40 in.	40 in.	40 in.
Weight on drivers, fully loaded	88,000 lb	199,000 lb	230,000 lb	230,000 lb
Wheelbase, each truck (rigid)	6 ft 10 in.	8 ft 0 in.	8 ft 0 in.	8 ft 4 in.
Locomotive truck centers	18 ft 9 in.	30 ft 0 in.	30 ft 6 in.	40 ft 6 in.
Over-all locomotive dimensions				
Height	13 ft 3 in.	14 ft 4 in.	14 ft 6 in.	14 ft 6 in.
Width	10 ft 1 in.	10 ft 0 in.	10 ft 0 in.	10 ft 0 in.
Length (inside knuckles)	33 ft 5 in.	44 ft 5 3/4 in.	45 ft 5 3/4 in.	54 ft 11 3/4 in.
Minimum radius curvature (locomotive alone)	50 ft	50 ft	50 ft	100 ft
Supplies (total capacity)				
Lubricating oil	50 gal	80 gal	80 gal	80 gal
Fuel oil	250 gal	635 gal	635 gal	1600 gal*
Engine-cooling water	40 gal	220 gal	240 gal	240 gal
Sand	8 cu ft	27 cu ft	27 cu ft	27 cu ft

*If boiler is applied
Boiler-water tank.....800 gal
Fuel-oil tank.....800 gal





380-HP (44-TON) SWITCHER—reduces motive-power requirements because of its all-round usefulness—it can handle switching, transfer service, and road work up to 35 mph.



660-HP SWITCHER—A study of 30 of these units that have been in operation more than three years shows an average maintenance cost of 24 cents per locomotive-hour.

1000-HP SWITCHER—In one midwestern yard, six of these units make twice as many locomotive-hours available as is being turned in by 14 steamers of comparable size.

Alco GE

AMERICAN LOCOMOTIVE AND GENERAL ELECTRIC

MAYARI
(RHYMES WITH "FIERY")
STAYBOLT STEELS

For Strength... Fatigue Resistance... Ductility...



All these and lower costs besides. No wonder the trend is to Mayari Staybolt Steels!

These tough alloys were developed to meet the increasing boiler pressures of modern locomotives—and the railroads themselves, both here and in Canada, have written the verdict: *Mayari has what we want.*

Why do they say that? What do they mean? They mean just this:

★ Mayari Staybolt Steels have higher strength than materials formerly used. You may specify either 50,000 or 55,000 minimum tensile.

★ This added factor of safety is combined with excellent ductility, high fatigue- and shock-resistance, and good machineability.

★ The steels thread easily, upset readily during the forming of the heads.

★ They cost less than other materials —no small item in itself.

For the most convincing proof, submit some Mayari Staybolt Steels to your test departments. Then, when you know their answer, figure the cost per ton—and see what you save. After that, we think you'll be writing Mayari into your next specifications.

BETHLEHEM STEEL

G-R-S CENTRALIZED TRAFFIC CONTROL

REDUCED ENROUTE TIME will be one of the most essential factors in meeting the demands of carrier competition after the war. G-R-S CENTRALIZED TRAFFIC CONTROL has proven many times on many railroads that it can save at least 1 minute of road time per mile without increasing maximum speed!

With G-R-S CENTRALIZED TRAFFIC CONTROL you can handle maximum traffic at any hour, day or night by:

- Eliminating slow speed or stops for the delivery of, or change in, train orders.
- Eliminating the majority of stops when trains meet or pass.
- Eliminating loss of time at hand-thrown switches.
- Eliminating time losses while waiting for clearance.
- Moving diversified traffic with minimum interference.
- Moving more gross tons per train hour without additional trackage.
- Moving more gross tons per train hour without increasing maximum speeds.

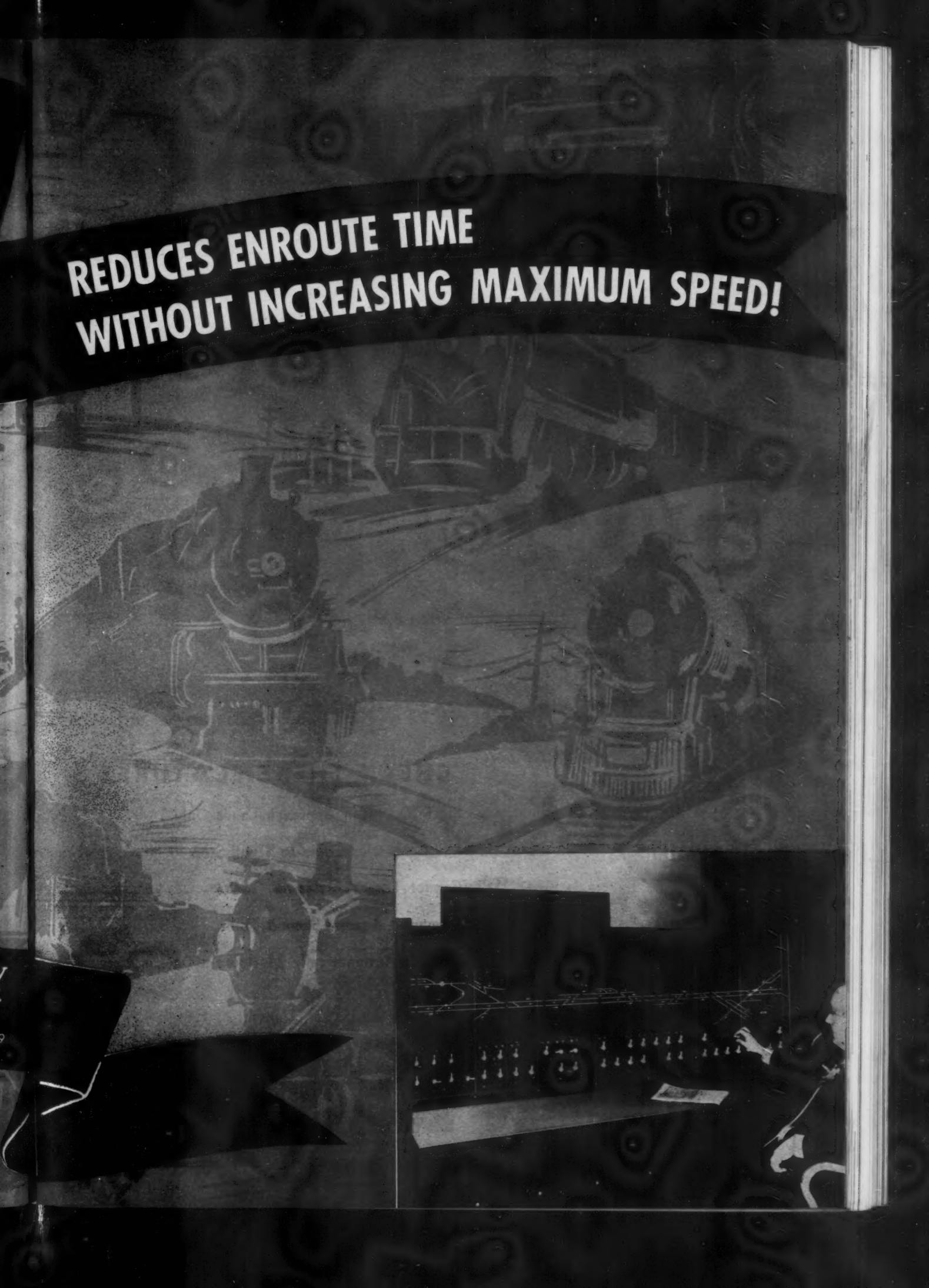
Ask our nearest District Office for an estimated study of the reduction in enroute time YOU can obtain by the installation of G-R-S Centralized Traffic Control.

GRS

GENERAL RAILWAY SIGNAL COMPANY

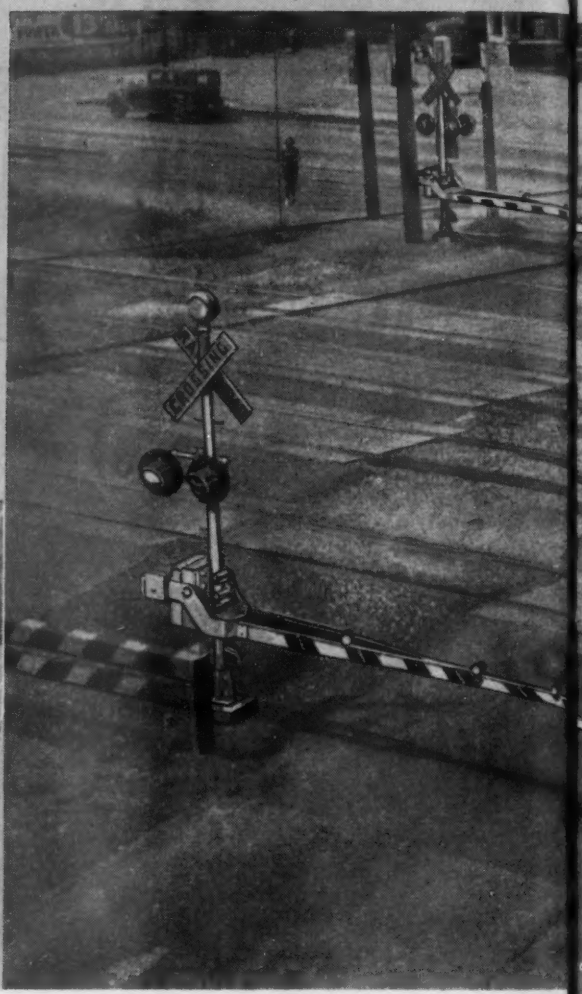
New York Chicago Rochester 2, N.Y. St. Louis

A-2059


REDUCES ENROUTE TIME
WITHOUT INCREASING MAXIMUM SPEED!

WELL PLA





Model 10
HIGHWAY CROSSING SIGNAL

U. S. Patent Nos. 2,137,196, 2,362,710 and 2,353,942
Other patents pending.

Patented in Canada June 27, 1939

CHECK THESE FEATURES

- √ Block Traffic in Approach Lanes Only
- √ Make Vehicles Come to a Full Stop
- √ Cannot Trap Vehicles on Tracks
- √ Safeguard Against Second Train
- √ Operate Automatically 24 Hours a Day on the Closed Circuit Principle
- √ Eliminate the Human Element

WESTERN RAILROAD

2330-60 S. ASHLAND AVENUE

NNED PROTECTION



YOUR railroad will be planning well when MODEL 10 HIGHWAY CROSSING SIGNALS are utilized to protect life and property and to eliminate traffic interruptions at the intersections of highways and railroad tracks. The reason for this is that Model 10 Signals are soundly engineered and built to give good service at all times.

At the well planned crossing illustrated six men were relieved for assignment to other duties when Model 10 Signals were installed. In 8 years of service no accidents have occurred at this crossing.

Traffic of 35,000 vehicles, 120 trains and uncounted thousands of pedestrians use the crossing daily.



FOR SURE PROTECTION
SPECIFY MODEL 10 HIGHWAY CROSSING SIGNALS

SUPPLY CO.
CHICAGO 8, ILLINOIS

Griffin

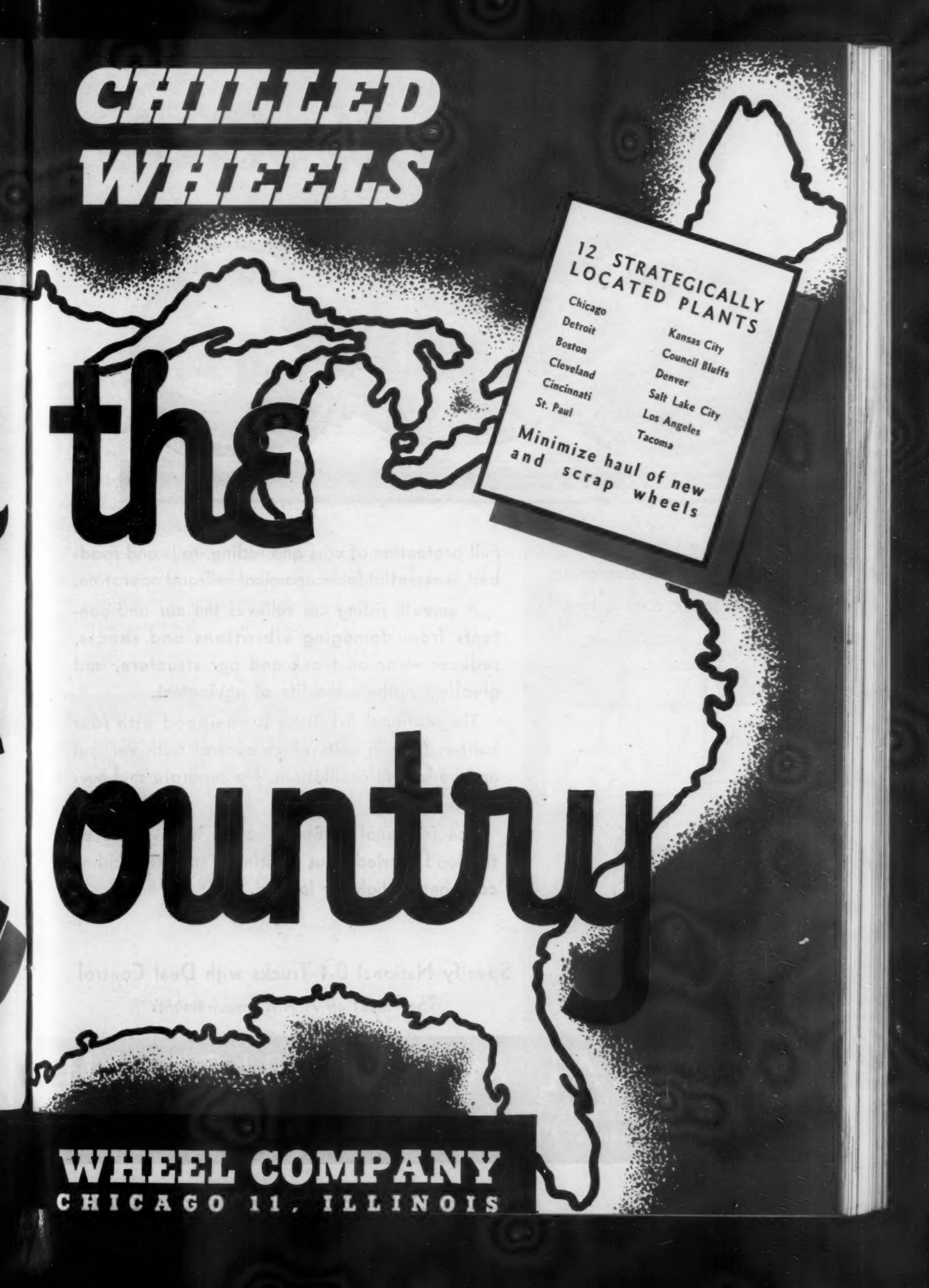


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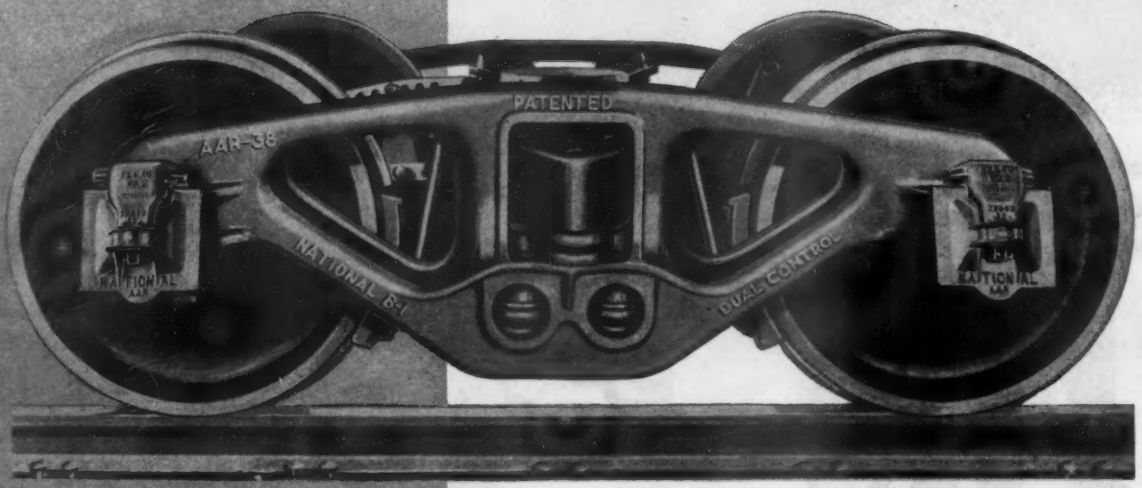


GRIFFIN

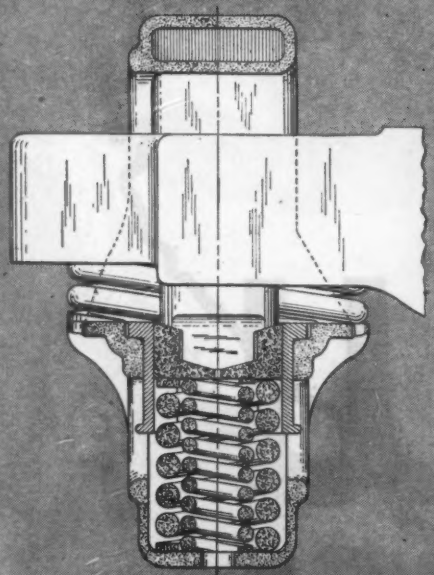
410 N. MICHIGAN AVENUE


CHILLED WHEELS
12 STRATEGICALLY LOCATED PLANTS
Chicago
Detroit
Boston
Cleveland
Cincinnati
St. Paul
Kansas City
Council Bluffs
Denver
Salt Lake City
Los Angeles
Tacoma
Minimize haul of new and scrap wheels
the
country
WHEEL COMPANY
CHICAGO 11, ILLINOIS

A Smooth Ride



Springs are protected.
Spring Plates are eliminated.
Maintenance cost is low.



Section Thru Control Unit
Two Control Units in each frame

Full protection of cars and lading, rails and roadbed, is essential for economical railroad operation.

A smooth riding car relieves the car and contents from damaging vibrations and shocks, reduces wear on track and car structure, and greatly lengthens the life of equipment.

The National B-1 Truck is equipped with four built-in friction units which control both vertical and horizontal oscillations. No separate snubbers are necessary.

The frictional snubbing action is governed by the load carried, thus assuring a smoother riding car whether light or loaded.

Specify National B-1 Trucks with Dual Control

They meet all A.A.R. requirements

NATIONAL MALLEABLE AND ST

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco
In Canada: Railway & Power Engineering Corp., Ltd., Toronto, Montreal

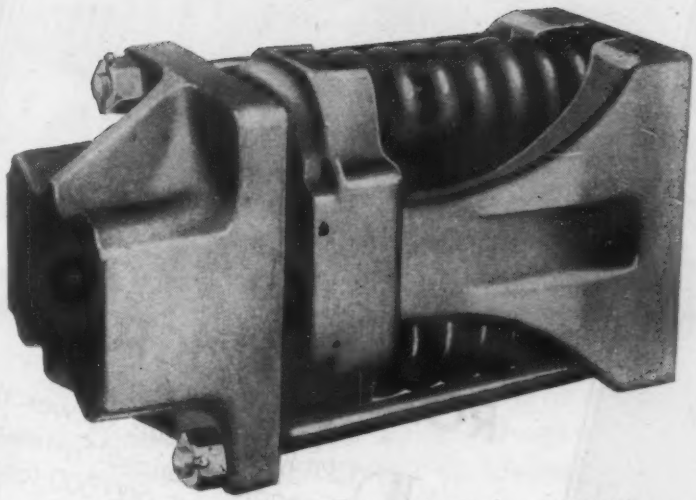
Light or Loaded

Millions of dollars are paid out each year for damage claims, of which a large percentage is due to inadequate draft gear protection.

National Friction Draft Gears were designed to afford maximum protection to cars and lading, by absorbing the shocks and blows incident to train operation.

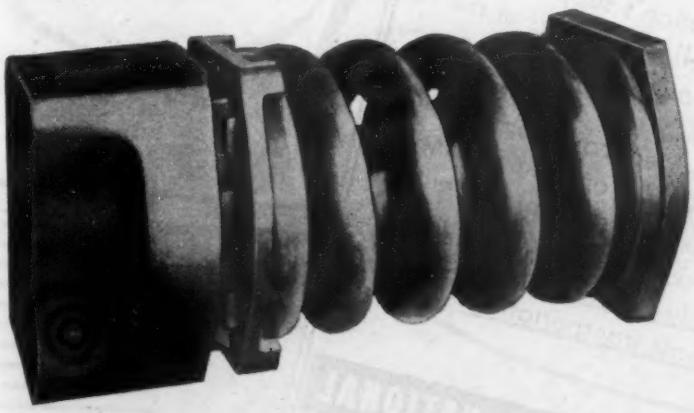
Smooth starting action coupled with high ultimate capacity allows these gears to absorb gradually the heaviest blows with the least shock to equipment.

This more efficient protection of cars and lading not only reduces damage claims, but also shows a noticeable reduction in car maintenance.



Type M-17-A—22⅜" long

Draft Gears A.A.R. Approved



Type M-50-B—20⅛" long

76 Years Service to Transportation

Specify NATIONAL Draft Gears for efficient, economical service.

STEEL CASTINGS COMPANY

Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.
General Offices: Cleveland, Ohio

"PRESSED S

Powerful T



ROAD TO VICTORY

DURING five years of war the Canadian National System has transported more than 345,000,000 tons of munitions of war and other products of industry, agriculture and natural resources. More than 2,500 locomotives and 80,000 Canadian National freight cars were in continuous service.

To transport the nation's supplies and munitions of war, as well as members of the fighting forces, is a titanic task. To keep trains moving on speedy and dependable schedules, to haul loaded cars from thousands of industrial yards, or sidings, and assure a flow of empty car replacements calls for a highly-skilled and specialized organization. Only the railways are able to do this job of mass transportation!

GRAND TRUNK-CANADIAN NATIONAL

ONLY THE RAILWAYS ARE ABLE TO DO THIS JOB OF MASS TRANSPORTATION

An advertisement of the Canadian National Railways of which the Grand Trunk is a vital part. A great railway system linking two nations united for Victory.



PRESSED STEEL CAR COMPANY, INC

D STEEL'S "CARS

el Invasion Forces On the Home Front

Without question, the railways are performing miracles on the home front. Not only are they keeping war plants humming but they have kept the invasion forces supplied. It is quite evident that the first lap of every materiel movement invasion bound starts via rail to shipping points. And here the railroads have done a magnificent job.

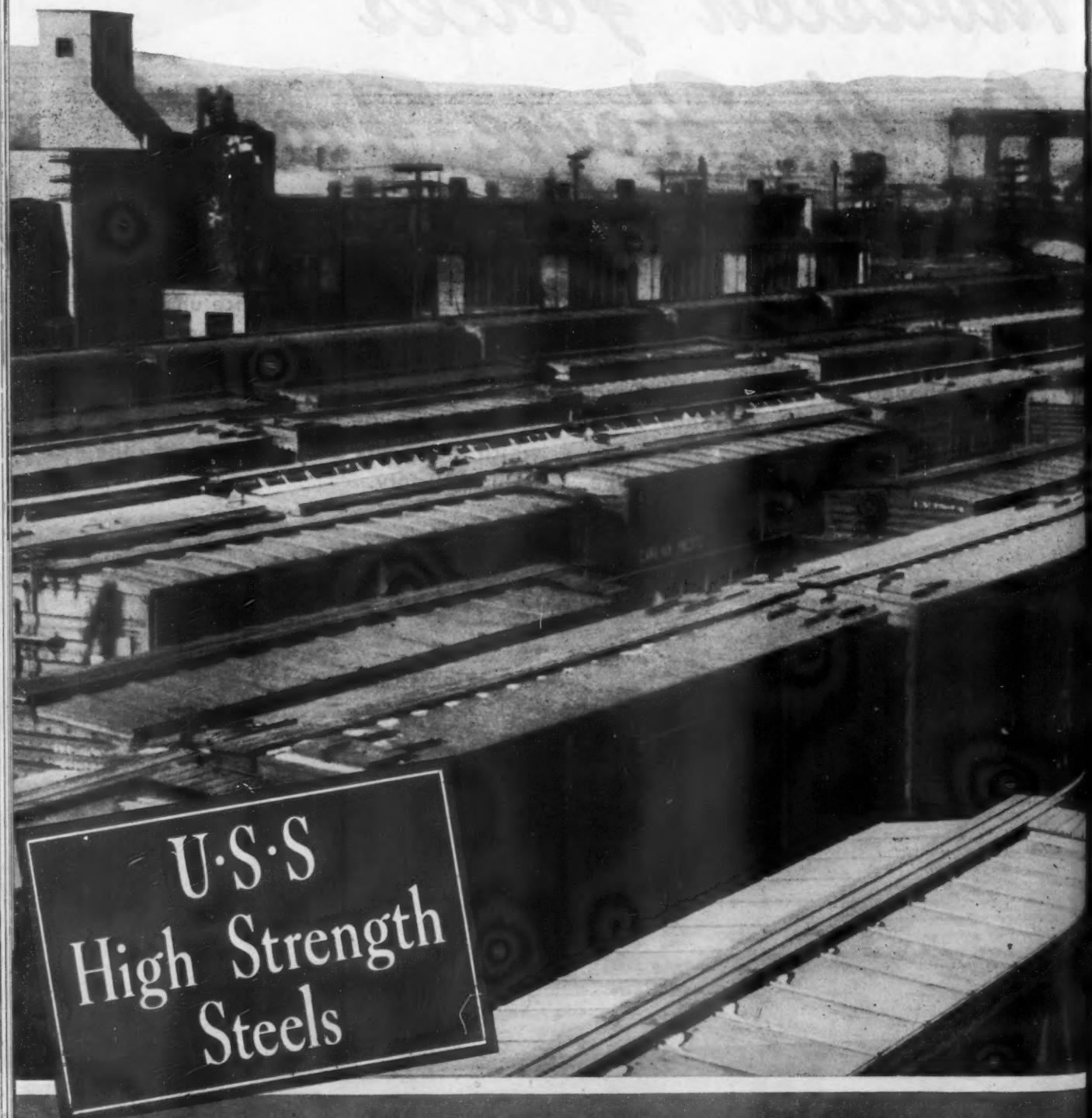
Pressed Steel's Cars, operating on the Grand Trunk, a strategic part of the great Canadian National System, have demonstrated their ability to deliver dependable trouble-free service under the continued stresses of higher speeds and heavier loading. Pressed Steel is proud of their rugged construction, their safety and availability and the manner in which these cars are performing on the road to Victory.



C NEW YORK – PITTSBURGH – CHICAGO

NOW, WHEN EVERY TON OF CARRYING CAPACITY COUNTS . . .

Deadweight reduction makes



UNITED STATES STEEL

extra
available 51 freight trains!

. . . THAT CARRY 135,234 TONS OF FREIGHT

. . . THAT COST NOTHING EXTRA TO HAUL

. . . THEY'RE THE BONUS CAPACITY OF 51,023 LIGHTWEIGHT CARS BUILT OF U·S·S COR-TEN



IN these COR-TEN cars, lightweight construction has trimmed off from 2 to 5 tons of unnecessary dead weight. Each of these lighter cars can carry an average of 2.65 tons more payload. The grand total of 135,234 bonus tons of carrying capacity thus made available, has put at the disposal of the railroads the equivalent of 2,704 extra 50-ton cars—equal to 51 average trains—*from which the revenue is all clear profit!*

Today, with car loadings the highest on record, the railroads are able to utilize more fully this additional capacity made available by lighter COR-TEN construction.

COR-TEN lightweight freight equipment has stood the tough test of wartime operation with flying colors. These cars, put into service since 1935, are still in use. All of them have carried heavy loads and made high mileage without failure. They have effected operating economies that are impossible with conventional equipment.

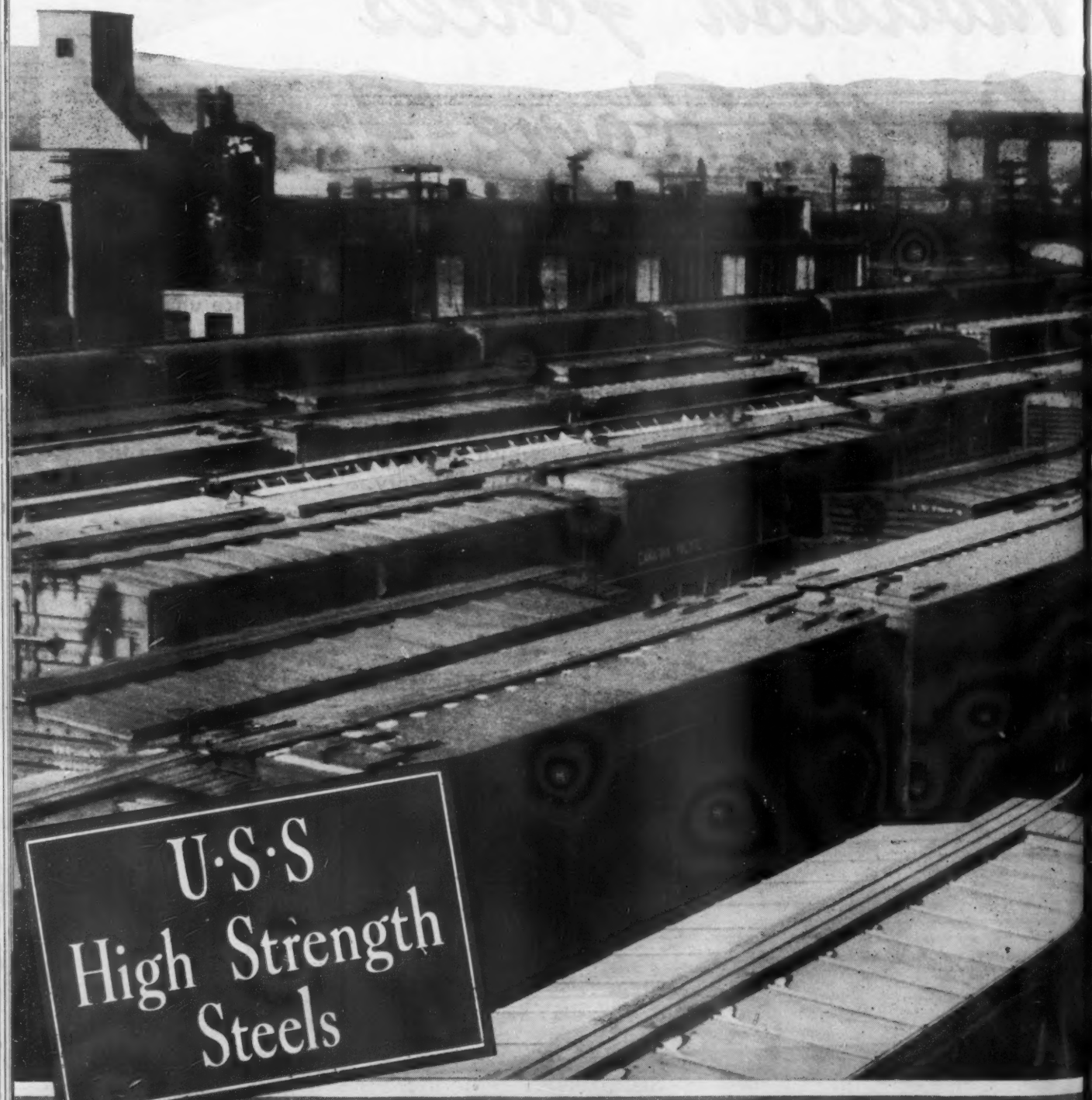
Today U·S·S COR-TEN—the pioneer low-alloy, high-strength steel—is again available to build your new equipment light, without loss of stamina, and at little increase in cost. If you need convincing proof of the economic advantages of lighter freight car construction, let us send you data on the experience of owners of COR-TEN equipment whose operating conditions most closely approach your own.

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

USS HIGH STRENGTH STEEL UNITED STATES STEEL

NOW, WHEN EVERY TON OF CARRYING CAPACITY COUNTS . . .

Deadweight reduction makes



UNITED STATES STEEL

available 51 extra freight trains!

. . . THAT CARRY 135,234 TONS OF FREIGHT

. . . THAT COST NOTHING EXTRA TO HAUL

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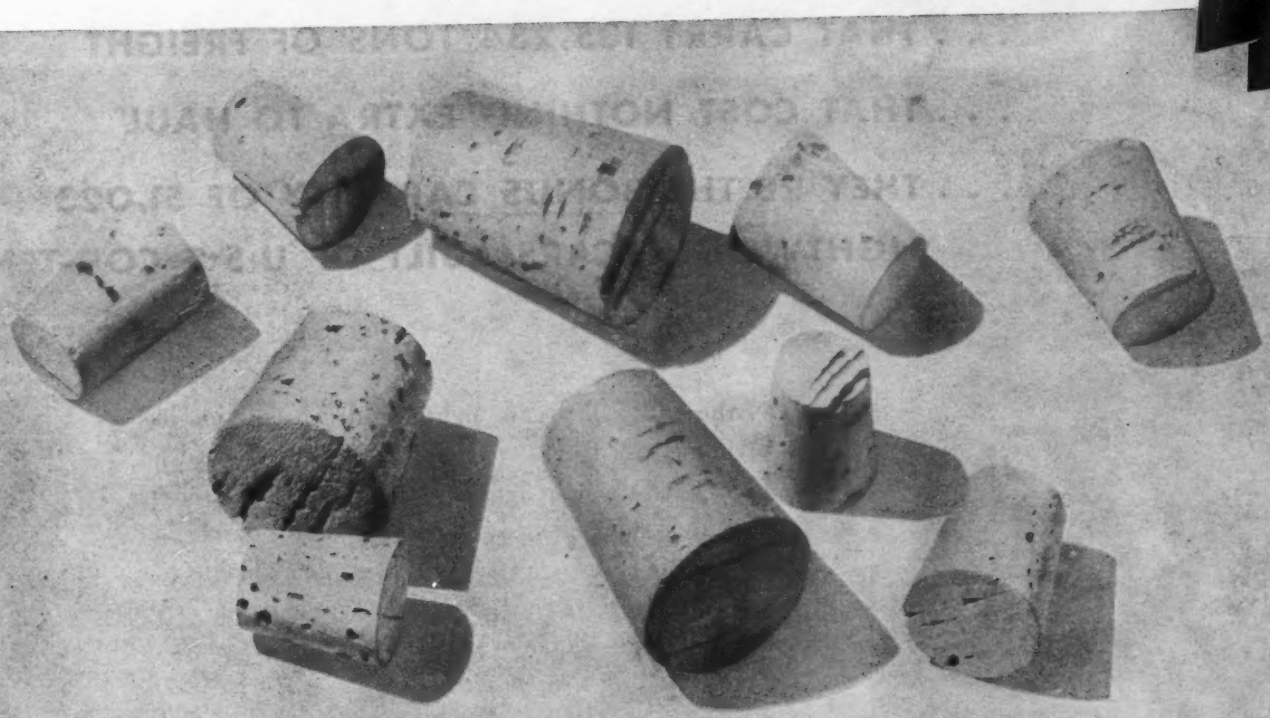
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TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

USS HIGH STRENGTH STEEL UNITED STATES STEEL

Fits like a cork in a bottle



IT'S THE TAPERED SPLINED SHANK THAT DOES IT!



...STOPS SEEPAGE OF MOISTURE BENEATH HEADS OF BOLTS...MAKES A WEATHER-TIGHT ASSEMBLY

● When you insert or remove a cork from a bottle, you've observed that the cork used is invariably *tapered.* It fits the hole in the neck of the bottle tightly.

What keeps the cork tight?

A cork in a bottle *uses the friction of the taper* plus the resiliency of the cork to make and keep a tight fit impervious to moisture from either end of the cork. And a Lamson *Weather-tight* Bolt does precisely the same thing when applied to wood assemblies except that the wood provides the resiliency!

Lamson *Weather-tight* Bolts have *tapered splines* on the shank—which when driven into a straight-sided hole—grip the wood all around the bolt shank, and hold that grip *because of the taper.* When driven into the bored hole in the wood, Lamson *Weather-tight* Bolts cannot turn when the nut is applied because of the splined shank.

On the underside of the head of the *Weather-tight* Bolt are two concentric, annular V-shaped ribs, which compress the wood fibers gently when the bolt is pulled down tight. The edge of the bolt head draws flush into the wood surface without counterboring. The head is thick enough at its slightly convex center *to protect the edges from wear.*

Moisture cannot seep under the head of the *Weather-tight* Bolt, nor can it enter from the threaded end of the *tapered, cork-like fit* of the bolt shank. Using the Lamson *Weather-tight* Bolt gives you a truly weather-tight assembly. The unsightly appearance of counter-bored holes frequently used for Carriage Bolt heads is eliminated with the disadvantages of dirt-catching and costly, time-consuming labor needed to bore them.

Design to use Lamson *Weather-tight* Bolts. As compared with Lamson Carriage Bolts *plus counterboring,* the slight cost differential becomes negligible or is entirely discounted. Ask for samples and more information.

THE LAMSON & SESSIONS COMPANY, General Offices, Cleveland, O.
Plants at Cleveland and Kent, Ohio; Chicago and Birmingham



"BOLTS, NUTS AND SCREWS"—1944 REVISION. Cloth bound. Limited edition, 180 pages of technical, practical information. Sent prepaid for *$1.00—cash or check must accompany your order.*

"BOLTS ARE IMPORTANT!"—24-page booklet of currently useful information for buyers of headed and threaded products, and describing Lamson & Sessions' specialty fastenings which have wide industrial applications *—now, and in the post-war period. Sent gratis.*

"THE LAMSON BLUE BOOK"—is our standard Catalog of standard products excepting our Aircraft products. *Sent gratis.*

"SIMPLIFIED STOCK LIST"—Of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks. *Sent gratis.*

HERE'S A COUPON FOR YOUR CONVENIENCE

THE LAMSON & SESSIONS COMPANY • 1971 West 85th Street • Cleveland 2, Ohio

Please send us ☐ Lamson Blue Book ☐ Bolts, Nuts and Screws ($1.00)
☐ Bolts are Important! ☐ Simplified Stock Sizes

Send information on ☐ Cap Screws and Set Screws ☐ Cotters
☐ Bolts ☐ Machine Screws ☐ Lamson Lock Nuts
☐ CP,HP,SF Nuts ☐ Lock-washer Screws ☐ Self-Tapping Screws

Name of Individual _____ Title or Kind of Work

Employed by (Name of Company) _____

Street Address _____

City and State _____

No. 1917—Copyright 1945—The Lamson & Sessions Co.

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line



Other Republic Products Include Carbon, Alloy and Stainless Steels . . . Bars, Plates, Sheets, Strip,

NOW, from ONE source of supply, you can obtain THREE different low-alloy High Strength Steels—ALDECOR, COR-TEN and REPUBLIC DOUBLE STRENGTH.

All three steels are similar in their performance as low-cost weight-saving materials, but slight variations may make one more suitable than the others for certain applications.

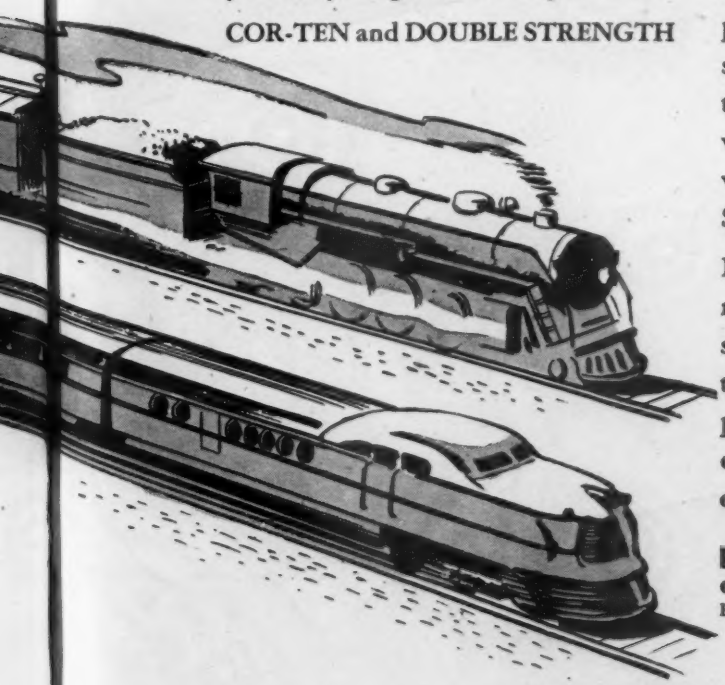
Thus, Republic, in line with its policy of always providing industry with a COMPLETE range of steels, offers you all THREE from which you may select the most efficient and economical analysis for your particular requirements.

COR-TEN and DOUBLE STRENGTH STEELS already have demonstrated their ability to *cut excess weight* from railroad equipment *in safety* and *at low cost.* ALDECOR, the newest of the three, promises to equal its companions and possibly surpass them in certain types of use.

All three steels are produced in bars, plates, sheets and strip. All three show a minimum yield strength of 50,000 pounds per square inch. And all three resist atmospheric corrosion—resist abrasion as well as carbon steels of equal physicals—and are easy to work and weld.

When you design and build freight and passenger equipment, your plans as to size and shape, load-carrying capacity, the type of service and other details will indicate the specifications which will determine the Republic High Strength Steel to use.

Republic metallurgical engineers are ready to work with your staff NOW in studying your needs and in selecting the steel which will mean greatest pay-load, lowest operating costs, highest efficiency and cheapest maintenance expense for you tomorrow.



REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Bldg., New York 17, N. Y.

Republic
HIGH STRENGTH STEELS
ALDECOR • COR-TEN • DOUBLE STRENGTH

Bolts and Nuts, Rivets, Wire, [illegible] Tube, Mechanical Tubing, Fabricated Steel Products

PEER

AAR APPROVED

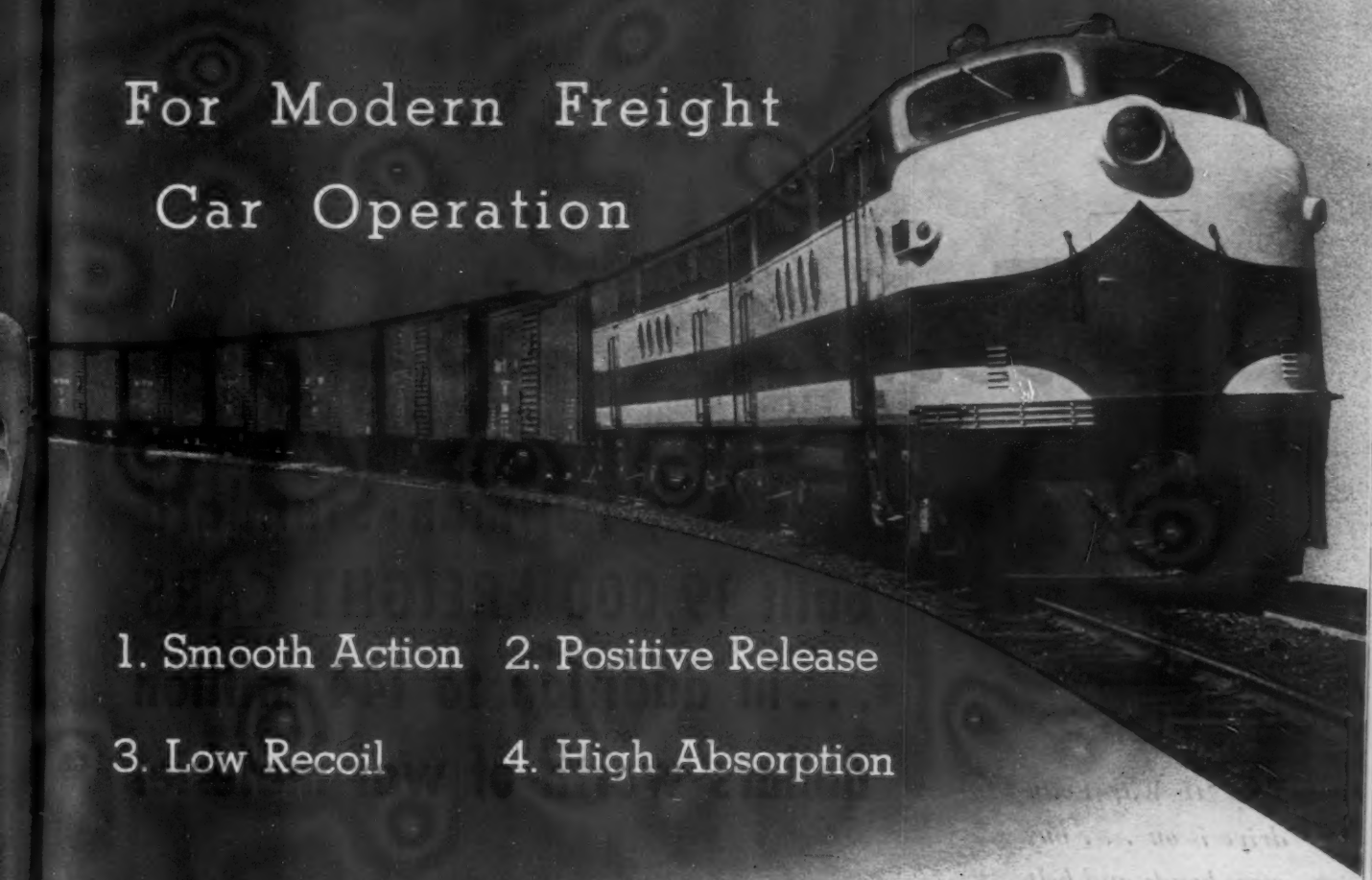


PEERLESS EQUIPMENT C

RLESS

H-1-B DRAFT GEAR

For Modern Freight Car Operation

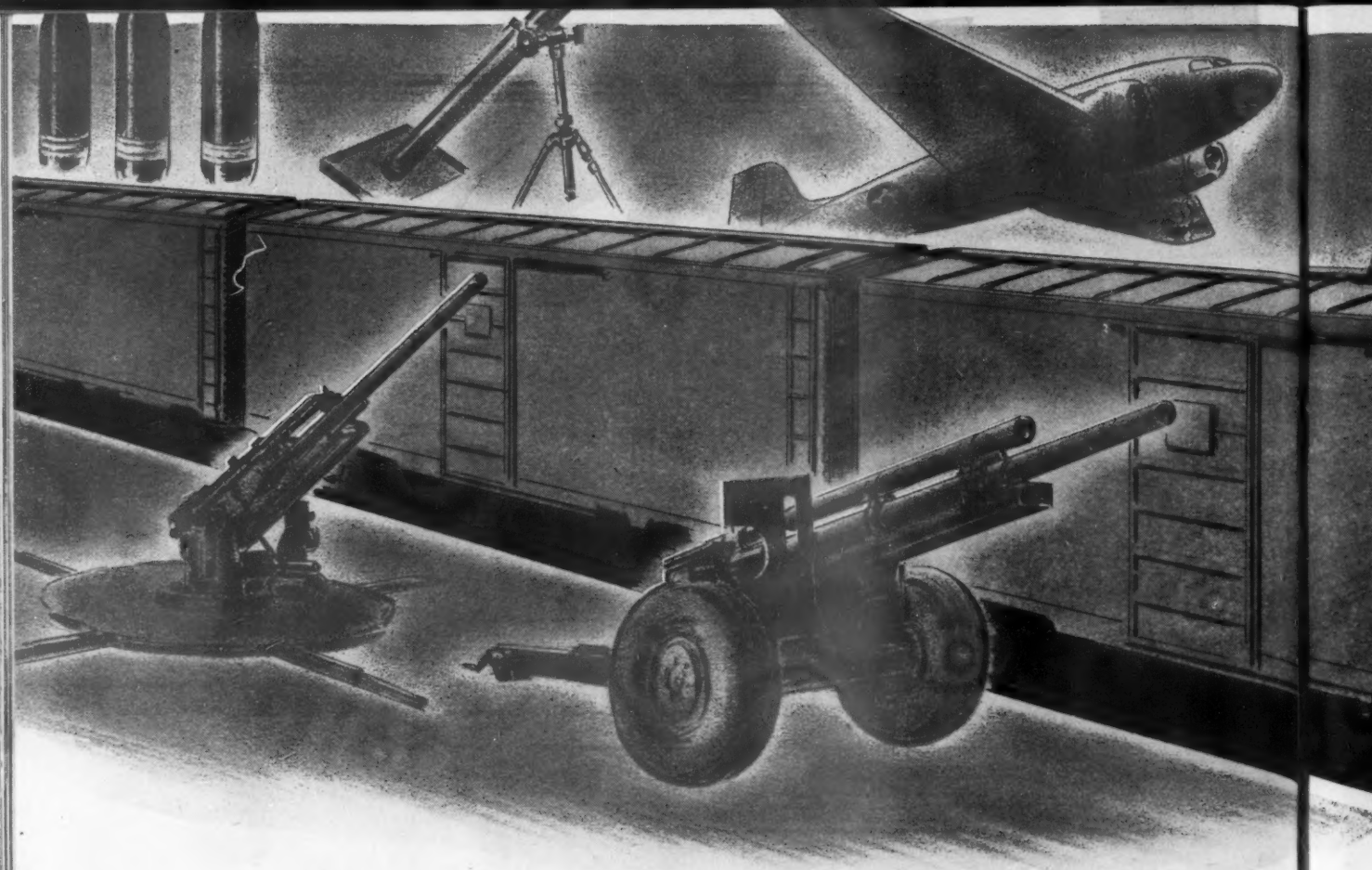


1. Smooth Action 2. Positive Release

3. Low Recoil 4. High Absorption

T COMPANY 310 S. MICH. AVE. CHICAGO 4, ILL.





Freight Cars are

IN 1944, Pullman-Standard built 19,000 FREIGHT CARS ... in addition to 144 million dollars worth of war matériel



The 7th War Loan drive is on . . . buy more bonds and help finish the job.

Pullman-

CHICAGO • NEW YORK



winning the war, too

Transportation is the primary arm of a vigorous war machine and "the freight car is the primary arm of transportation."

With this in mind we have shipped a constant stream of new freight cars from our plants—cars which are now in foreign theatres of war—cars to move coal from the mines at home . . . steel from the mills . . . wheat from the fields . . . lumber from the forests . . . all these and numberless other commodities that must be taken up to the front lines of industry.

Transportation of the materials involved in our 1944 production furnished approximately five million dollars in freight revenue to the railroads.

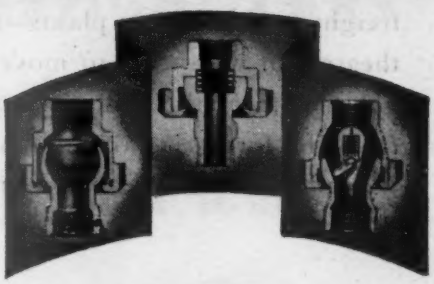
Standard CAR MANUFACTURING COMPANY

CLEVELAND • WASHINGTON, D. C. • PITTSBURGH • BALTIMORE • BIRMINGHAM • WORCESTER, MASS

San Francisco Sales Representative, Mark Noble



Feed lines which carry the essential fluids of industry need constant protection against those "traffic interrupters"—vibration and shock. Barco Flexible Joints provide such protection by compensating for contraction and expansion with responsive movement in every direction. For over 30 years they have been the accepted standard in every field of both industry and transportation. Barco Manufacturing Co., Not Inc., 1800 Winnemac Ave., Chicago 40, Illinois.



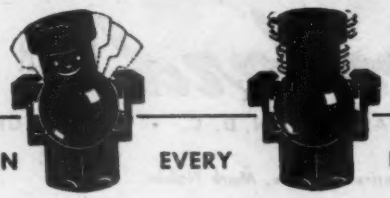
In Canada: The Holden Co., Ltd., Montreal, Canada

BARCO

THE FREE ENTERPRISE SYSTEM IS THE SALVATION OF AMERICAN BUSINESS

FLEXIBLE JOINTS

Not just a swivel joint . . . but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.



"MOVE IN EVERY DIRECTION"

SAYS THE MAN IN THE HELMET—



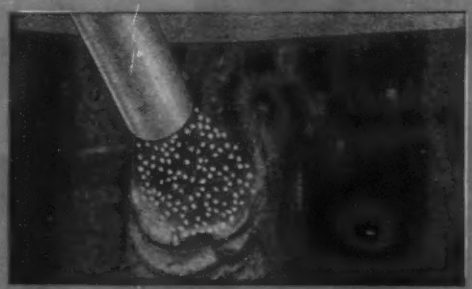
"I get nice, smooth flat fillets every time with AIRCO No. 78E...

(AWS Classification E 6010)

***...** "It's my favorite electrode for all-position DC reverse polarity welding of mild steel*



"Look at that neat, flat fillet. Airco No. 78E gives that type of high quality, flat-faced fillet in all positions, and it's especially good on vertical and overhead.



"Its special coating and its fine spraying action speed up vertical and overhead fillet welds. Metal sets up rapidly and the arc is strong and forceful.



"There's no interference from slag and no deflection in the arc in any position. Deposit speeds are faster than most electrodes — weld contour is always tops.



"Slag comes off easily, another good feature. That's why I say when the job calls for an AWS E6010 electrode — and when quality, speed and appearance are important — give me Airco 78E every time."

Take a tip from the Man in the Helmet and select your electrodes for their working ease and efficiency as well as for their metallurgical properties.

There is a complete line of Airco electrodes for every welding job. Catalog No. 120 gives full details. For a free copy write the nearest Airco office or Dept. RA at the New York address. Air Reduction, General Offices: 60 East 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., General Offices: Houston 1, Texas.



Weld with

AIR REDUCTION

Offices in all Principal Cities

AIRCO ELECTRODES FOR BETTER WELDS AND EASIER WELDING

Tampers for ANY BALLAST and ALL LIFTS

Whatever the lift or nature of the ballast, tamping with the JACKSON ***vibratory*** Tamper will provide closely-fitted, interlocked ballast, that assures sound track and good drainage . . . The ***interchangeable blade*** feature of JACKSON Tampers affords an unusually wide range of tamping utility. Check the illustrated blades for use in specific ballast requiring a given amount of raise.

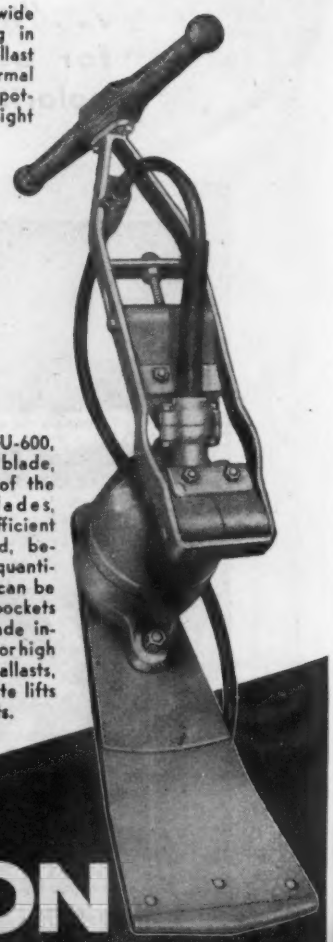


Above — No. 1-2A L & R Step-cut blade is the most generally used JACKSON blade because of its exceptionally wide tamping range, in low or medium lifts. Performs excellently in all types of ballast.

No. U-609 blade for fast digging and removal of old ballast in skeletonizing or when tie renewals are made. Effective in digging out water pockets, removing ice from platforms, switches, frogs and flangeways. This JACKSON blade will equal the work of several men with picks.



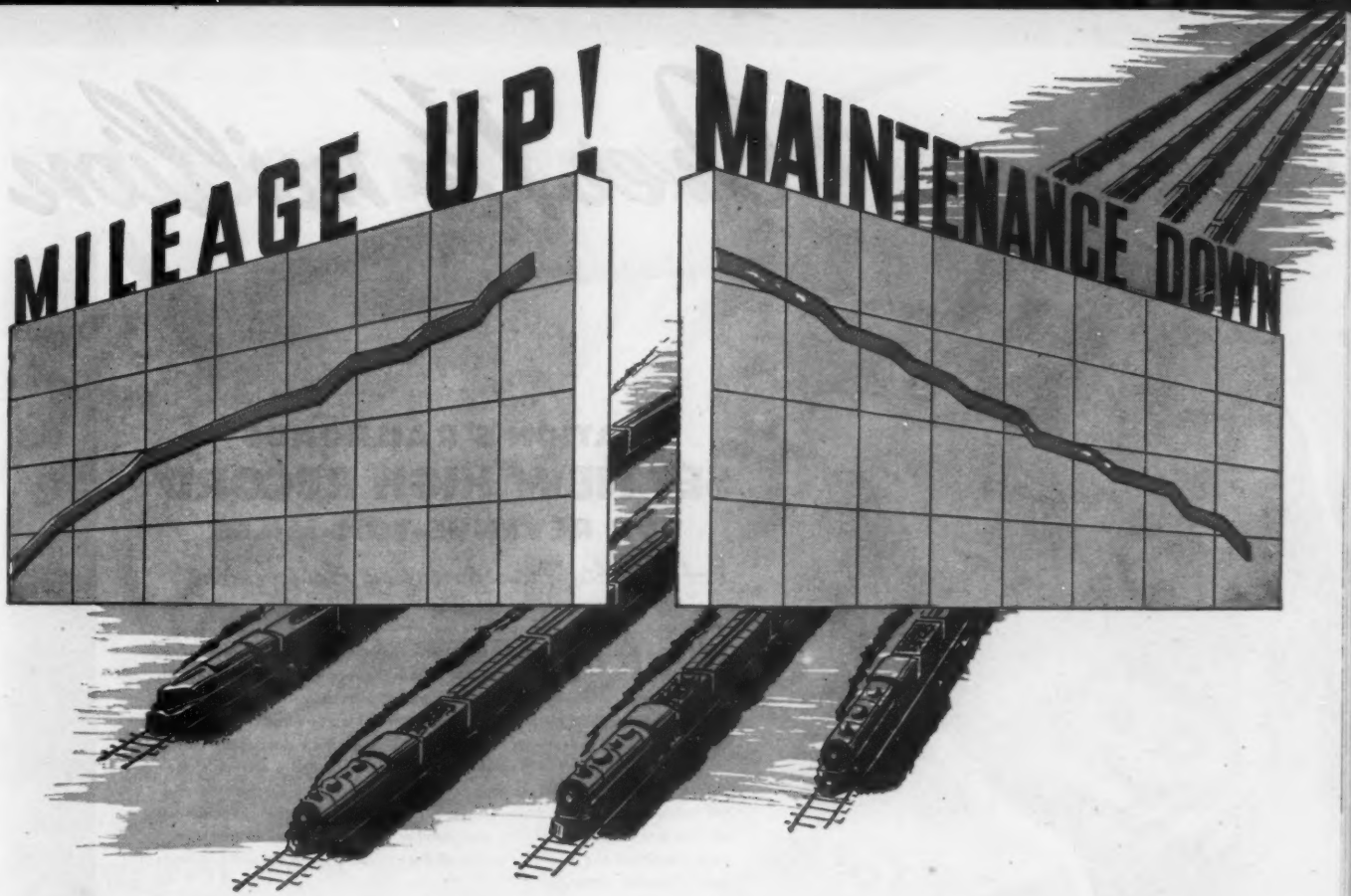
Left — No. U-606, 6" wide is tops for surfacing in gravel, rock or slag ballast up to 1½" in size in normal lifts. Also efficient in spotting operations in light ballasts.



Right — No. U-600, 9" wide gravel blade, is the fastest of the JACKSON blades, provided sufficient lift is afforded, because large quantities of ballast can be carried to fill pockets opened by blade insertion. Good for high lifts in all ballasts, low or moderate lifts in light ballasts.

JACKSON vibratory tampers are standard on the majority of the country's leading railroads. Their superiority is based on the adaption of vibration to ballast tamping, a principle originated by JACKSON — the sole manufacturer of ***vibratory*** Tampers. Write for literature describing Jackson Tampers and how to use them.

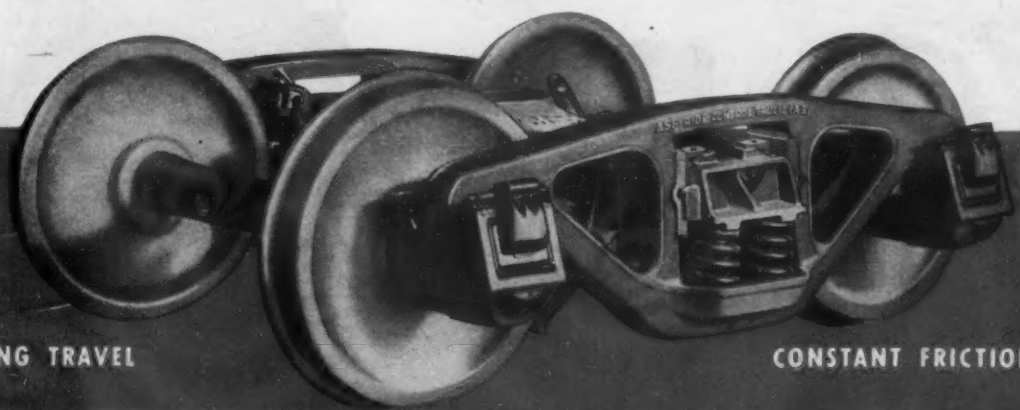
ELECTRIC TAMPER & EQUIPMENT CO., LUDINGTON, MICH.



Ride-Control!

Rely upon the A. S. F. Ride-Control Truck (A-3) for an easy freight-car ride at any speed and dependability in all types of service. A simple assembly, without spring plates or spring planks, the Ride-Control Truck keeps more freight cars moving, more of the time, with minimum maintenance cost.

THE TRUCK FOR TODAY'S NEED . . . TOMORROW'S SPEED!



LONG SPRING TRAVEL

CONSTANT FRICTION CONTROL

AMERICAN STEEL FOUNDRIES

CHICAGO

MINT-MARK OF FINE CAST STEEL



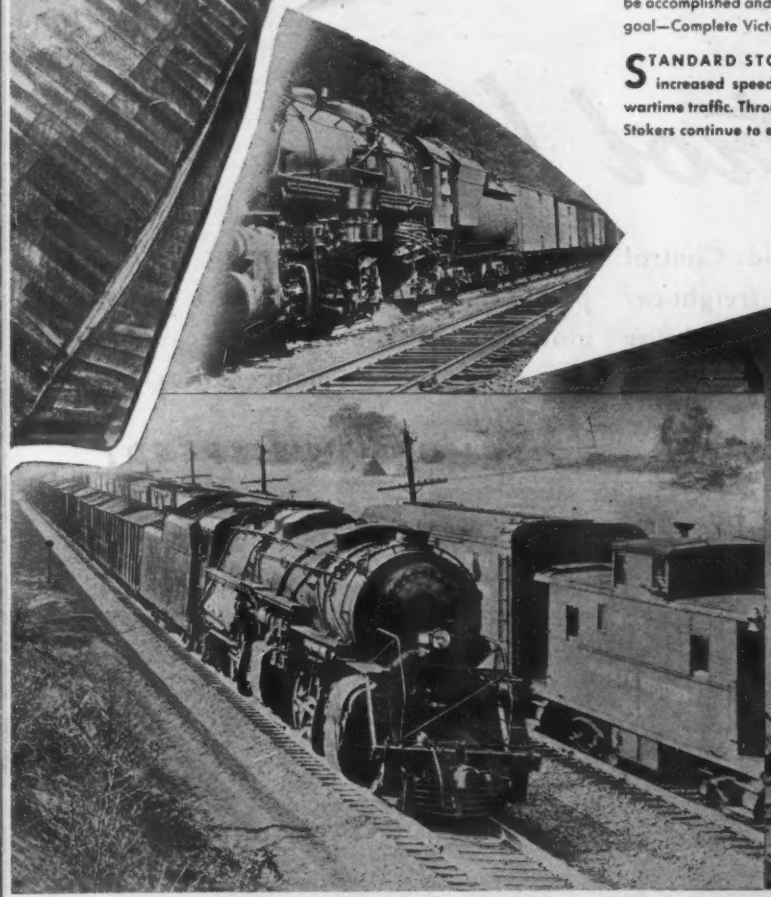
Over 1¼ million

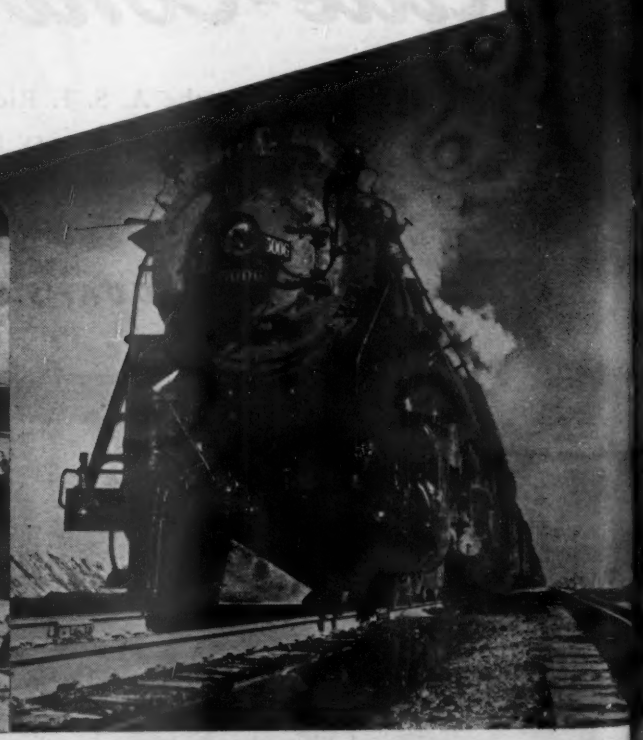
NATION'S RAILROADS SET NEW HIGH RECORD FOR REVENUE-TON-MILES

A Mighty Transportation Achievement

RECORDS once thought impossible are achieved today and topped tomorrow as the railroads' volume of freight traffic continues upward to reach unprecedented levels. Since before Pearl Harbor the revenue-ton-miles have each year surpassed the previous year's record and '45 will not likely be an exception. In successfully handling the ever-increasing volume of wartime traffic the railroads by no means have had an easy task, particularly during these days of diminishing manpower and material shortages. That they have succeeded is a credit to their operating ingenuity, careful planning, and united effort—not to overlook the effective cooperation given by shippers, receivers and government agencies concerned with wartime transportation. This year another record movement of freight must be accomplished and it calls for continued close cooperation to attain the common goal—Complete Victory

STANDARD STOKER fired locomotives with greater hauling capacity and increased speeds are a vital factor in the record-breaking movement of wartime traffic. Through dependable service and efficient firing of coal, Standard Stokers continue to earn the confidence of railroad men everywhere.





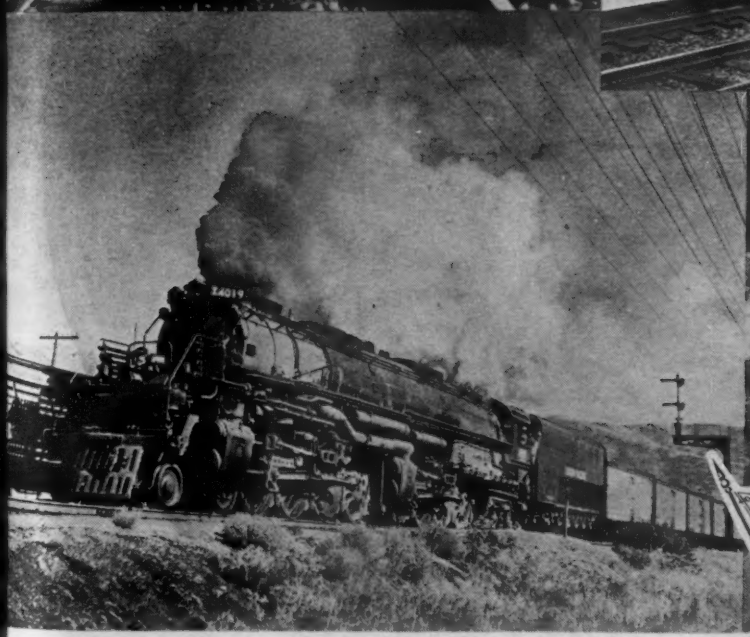
THE STANDARD STOKER COMPANY, INC

TON-MILES of FREIGHT *Every minute in 1944*











ARMY E NAVY

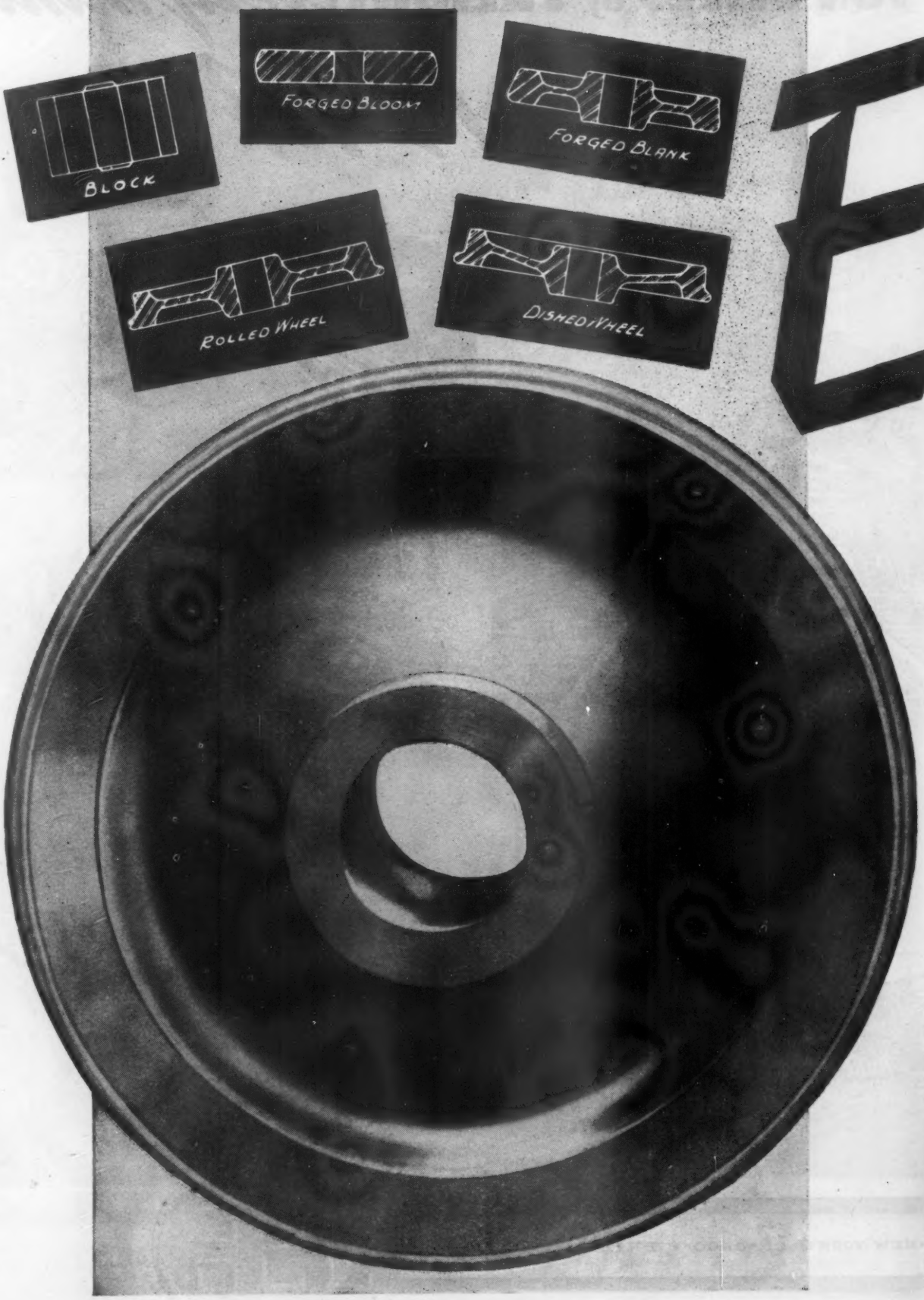
NSA 1944

·NEW YORK · CHICAGO · ERIE · MONTREAL·

556

REG U.S. PAT OFFICE

FROM INGOT BLOCK TO WHEEL



— WITH A SINGLE HEATING —

EDGEWATER

ROLLED STEEL

WHEELS

THE EDGEWATER process of wheel manufacture assures for the product the maximum benefits to be derived from hot working high quality steel. Forging and rolling with one heating, and relatively low finishing temperature, gives optimum grain structure and high physical properties.

EDGEWATER STEEL COMPANY

PITTSBURGH, PA.

Atlanta, Ga. Baltimore, Md. Boston, Mass. Chicago, Ill. Cleveland, O. Kansas City, Mo. Louisville, Ky. New York, N.Y. Philadelphia, Penna. St. Louis, Mo. St. Paul, Minn. San Francisco, Calif. Seattle, Wash. Washington, D. C.

New!



...and its importance to you!

Would you like to know how three million tons of war-time Steel Castings were made last year, and where they were used?

Would you like to know the important ways in which Steel Castings serve America, both at war and on the home front?

The story is told in a 64-page book, of pictures and facts. We believe you will find it interesting reading, and will send you a copy if you'll give us your name, occupation and address on the coupon, or on a post card. Address Steel Founders' Society, 920-R Midland Building, Cleveland 15, Ohio.

STEEL FOUNDERS' SOCIETY
920-R Midland Building
Cleveland 15, Ohio

Please send me a copy of the Steel Castings Book.

Name.....

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City & State.....

Firm.....

Occupation.....

MODERNIZE AND IMPROVE YOUR PRODUCT WITH STEEL CASTINGS



importance
you!

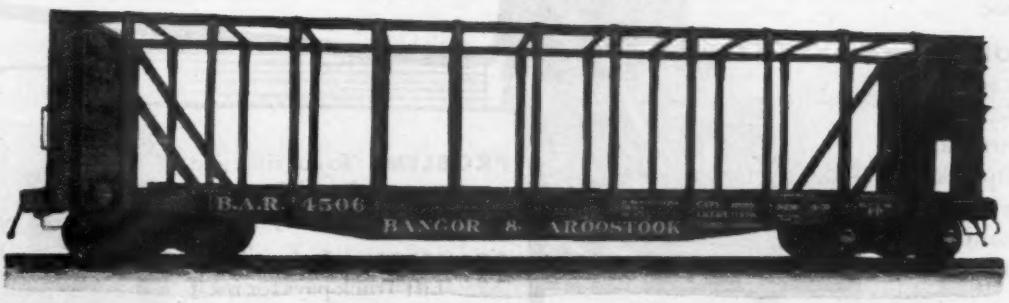
ow three million tons
were made last year,

the important ways
rve America, both at
?

page book, of pictures
will find it interesting
copy if you'll give us
address on the coupon,
teel Founders' Society,
leveland 15, Ohio.

STEEL CASTINGS

MAGOR



Designers and Manufacturers of Freight Cars of all Types Including Air Dump Cars

Special revenue traffic originations confronting many railroads require study and solution. We will welcome the opportunity of cooperating with you.

MAGOR CAR CORPORATION

50 Church Street
New York 7, N. Y.

Consider BAKER TRUCKS *for* PROBLEMS LIKE THESE

A

PROBLEM: To cut time and cost of handling baggage in a railway terminal.

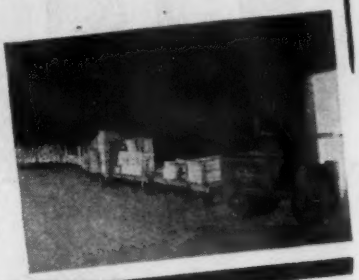
SOLUTION: Baker Platform Truck* saves many man hours daily by speedy transfer between baggage rooms and trains.



B

PROBLEM: To haul large quantities of miscellaneous freight comparatively long distances in freight house and yard.

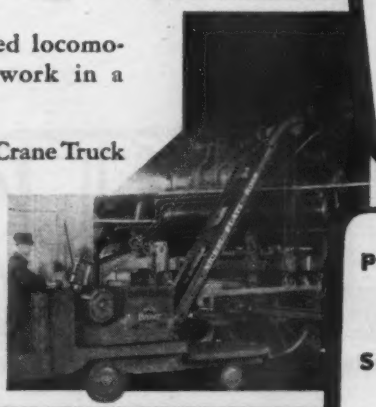
SOLUTION: Baker Tractor* provides efficient flexible motive power for long trailer trains, heavily loaded with all kinds of freight.



C

PROBLEM: To speed locomotive maintenance work in a roundhouse.

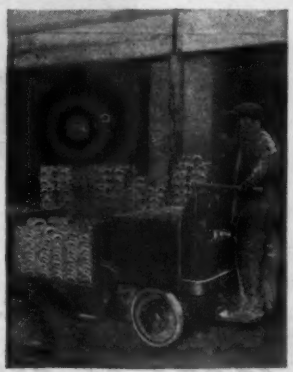
SOLUTION: Baker Crane Truck simplifies removal and application of heavy parts, and efficiently performs a wide variety of handling operations.



D

PROBLEM: To cut time and cost of handling supplies in railway stores.

SOLUTION: Baker Low-Lift Truck pays for itself many times over in speeding loading and unloading from cars, handling in storage, and transferring from store to roundhouse or yard.



E

PROBLEM: To provide efficient handling of heavy, cumbersome parts in railroad yards.

SOLUTION: Baker Crane Truck's trackless flexibility and heavy duty capacity assists in complicated assembly operations as well as speeding transfer of heavy parts from stores or shops to required locations.



If you have handling problems similar to those above in your stores, yards, terminals, shops or freight stations, a Baker Material Handling engineer can recommend the correct solution.

**Complying with W. P. B. orders, the manufacture of this model has been temporarily discontinued. As soon as restrictions are lifted, it will again be available.*

BAKER INDUSTRIAL TRUCK DIVISION
of the Baker-Raulang Co., 2172 W. 25th St., Cleveland, Ohio
In Canada: Railway and Power Engineering Corp., Ltd.

Trade mark Registered U. S. Pat. Off.

2200-2R-43

Baker INDUSTRIAL TRUCKS

When your business is OUR BUSINESS

● There is *one* phase of the railroad business which we like to feel is also *our* business. We mean railroad maintenance painting. For many years . . . and particularly during the war . . . Glidden has made railway paints and painting a No. 1 concern. We have conducted extensive studies of railway painting problems to learn how to make paint serve you better.

From these studies has come the famous Glidden TWO-A-DAY car painting plan, which is saving railroads valuable time and money every day . . . also the Glidden Railroad Technical Service, which offers a huge fund of practical "know-how" that many railroads now depend upon for answers to their painting problems.

Today, when preservation of your equipment is so vital to the war effort, we of Glidden have "cleared the tracks" to give the railroads of America preferential service. With eight strategically located plants and research laboratories, we are ready to offer you prompt assistance on any matter concerning paint or painting procedures. Call on us at any time!

TIME-TESTED

THE GLIDDEN COMPANY · Cleveland 2, Ohio

GLIDDEN *Pacemaker in Paints*

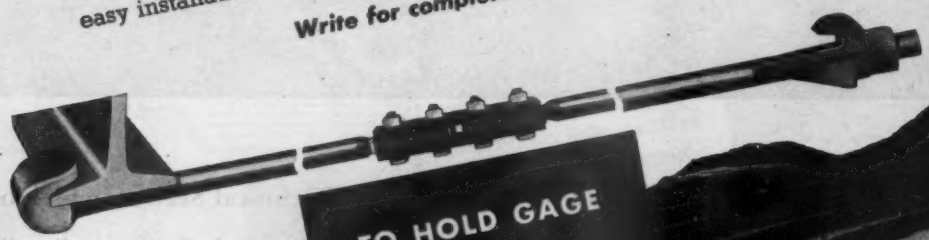
A dependable source of Track Economies...

OLIVER GAGE RODS

By firmly tying both rails together as a single unit, Oliver Gage Rods provide a worthwhile source of track economies. They prevent rail movement, reduce regaging and extend the life of ties.

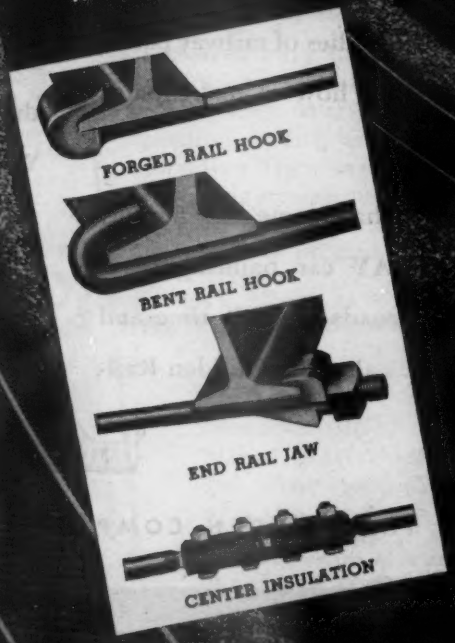
Oliver Gage Rods are manufactured in styles to suit various requirements and conditions. They are designed and made for easy installation and long life.

Write for complete details.



TO HOLD GAGE

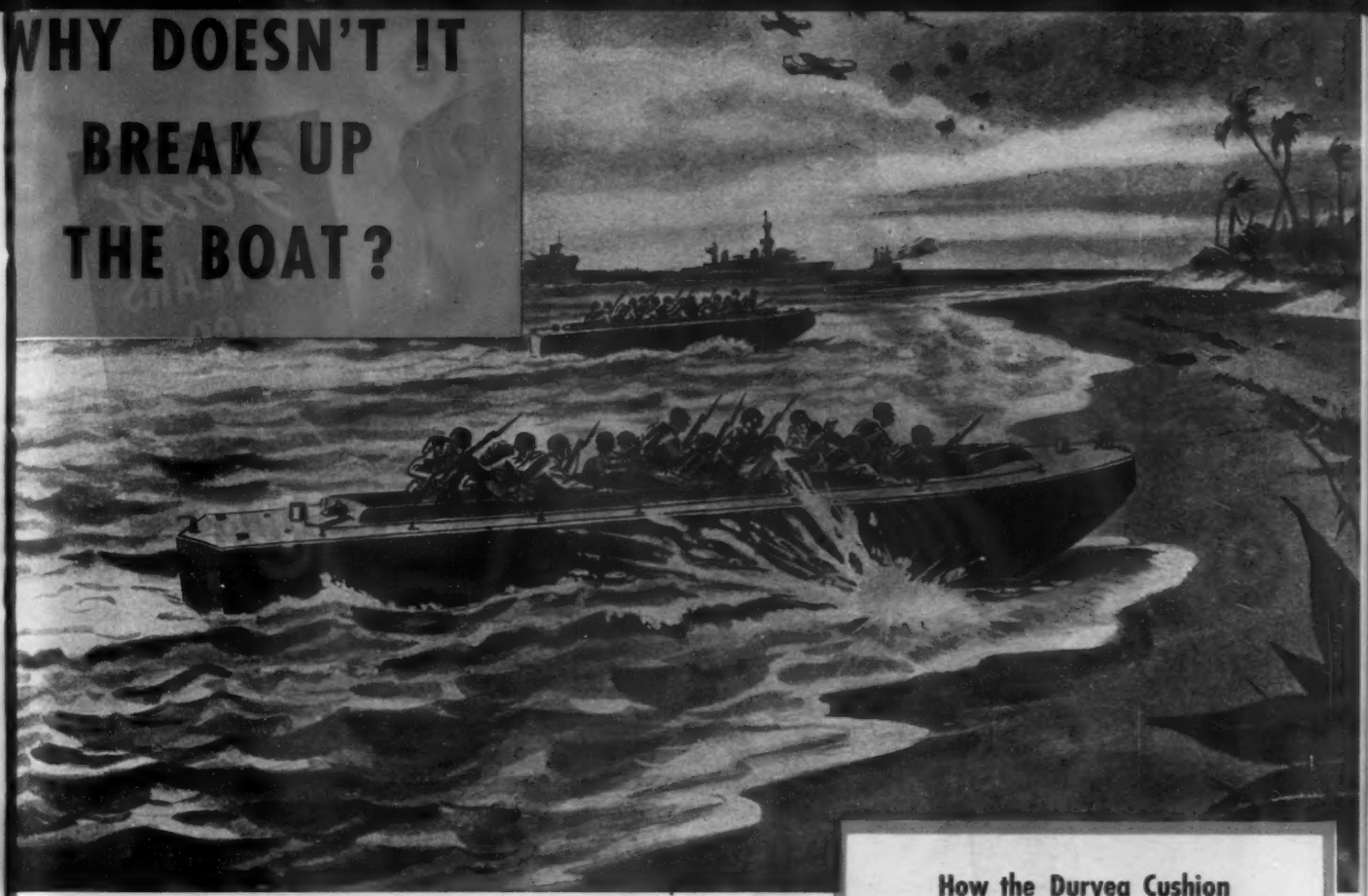
—on stiff curves
—at main switches
—near crossings
—wherever service is severe



OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH AND MURIEL STREETS · PITTSBURGH 3, PENNSYLVANIA

WHY DOESN'T IT BREAK UP THE BOAT?



A familiar sight in newsreels—American small landing craft roaring in to hit a beach at full speed. They can do it again and again without damage to their hulls or cargo, because a specially designed prow doesn't take the whole impact in one place; the blow is *traveled* back along the keel, absorbed as it goes.

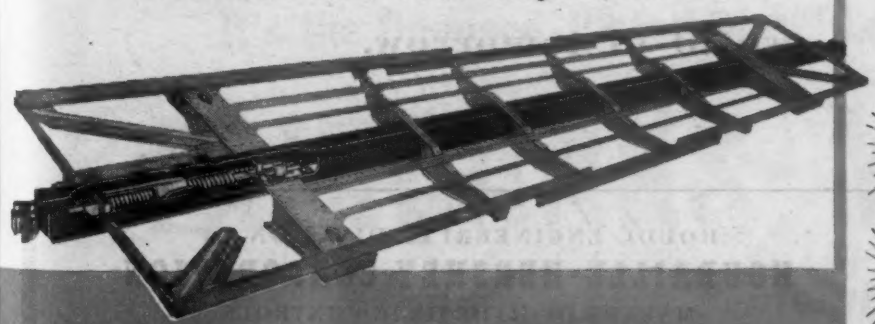
MOVEMENT CUSHIONS THE SHOCK!

The same principle, in the Duryea Cushion Underframe, gives you SHOCKPROOF SHIPPING.

The unique Duryea floating center sill *travels* the force of any impact the entire length of the car, absorbing it as it goes in big cushion springs—car and lading ride *over* the blow.

O. C. DURYEA CORPORATION

30 Rockefeller Plaza, New York 20, N.Y. - 135 So. LaSalle St., Chicago 3, Ill.
725 Fifteenth Street, N. W., Washington 5, D. C.



DURYEA *Cushion* UNDERFRAME

FOR FREIGHT CARS

The Modern Safeguard For Shockproof Shipping

How the Duryea Cushion Underframe Contributes to Victory

PROTECTS car and lading, prolongs car life, cuts damage claims.

PERMITS higher handling speeds.

ELIMINATES gear replacements maintaining efficiency for life of car.

SAVES TIME loading and unloading. Needs less packing and bracing.

SAVES MONEY usually spent for maintenance on every part of car.

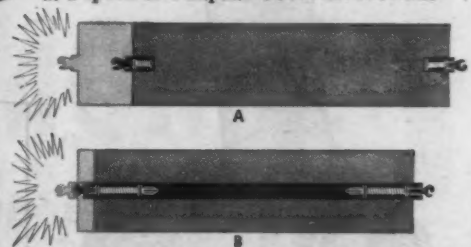
COMPLEMENTS air brake; Duryea cars withstand abrupt stops.

CUTS SLACK to pre-determined ideal.

COSTS NO MORE than conventional type, for average Duryea gear.

Here's what actually happens

. . . when two stationary freight cars receive the same impact, equivalent to a 50-ton car, loaded to capacity, coupling at a speed of 4 m.p.h.: CONVENTIONAL



CAR (A): Draft gear "goes solid," car receives almost entire impact.

DURYEA CAR (B): Shock absorbed by cushion gears, car and lading are comparatively undisturbed.



First
10 YEARS
AGO
First
TODAY

IMPROVED Houdaille railroad hydraulic shock absorbers for vertical and lateral control are now ready for the new railroad world of tomorrow.

HOUDE ENGINEERING DIVISION OF
HOUDAILLE-HERSHEY CORPORATION
MAKERS OF HYDRAULIC CONTROLS
BUFFALO 11, NEW YORK
*Pronounced—Hoo-dye

Tomorrow's POWER Today!



It's the Opposed-Piston Diesel Locomotive by

FAIRBANKS-MORSE

A name worth remembering

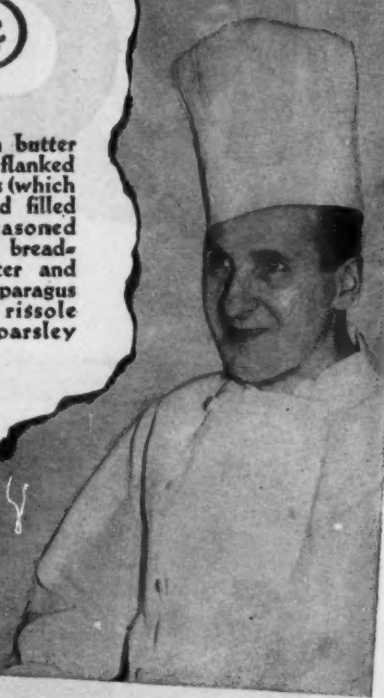
"Specialty of the House"

CHEF LOUIS BARBAROUX Offers His

RECIPE

Trim fat from tenderloin roast, season with salt, pepper, paprika and a little garlic salt. Brush top of roast with melted fat and place in well greased baking pan. Roast 40 minutes to pound in a fairly hot oven. To make gravy, strain fat from drippings, mix resulting juice with some water, boil several minutes and strain again.

Arrange mushroom heads which have been lightly sauted in butter across top of roast. Serve flanked with stuffed halved tomatoes (which have been scooped out and filled with mixture of highly seasoned chopped beef, topped with breadcrumbs, brushed with butter and glazed under a hot flame), asparagus in hollandaise sauce, and rissole potatoes. Garnish with parsley sprigs.



It's BEEF TENDERLOIN Roast at Detroit's Book-Cadillac Hotel. As served in the famous "Book Casino" (illustrated below) the Roast is both a visual and a gastronomic delight.

"Specialty of the House" . . . in Napery. Like so many other hotels, restaurants and clubs, the Book-Cadillac Hotel has chosen for its table-settings—



*TABLECRAFT

(ROSEMARY-BASCO)

Cloths, Napkins and Damasks, made *right* in America

ROSEMARY SALES

A DIVISION OF SIMMONS CO.

40 Worth Street, New York 13, N. Y.

*Reg. U. S. Pat. Off.

Next to Good Food, People Prefer CLOTH-COVERED TABLES



O.K.





The Little Brothers O'Kay

• There are four little Elves who are proud of themselves
They are called Little Brothers O'Kay
For in sunshine and rain, they ride with the Train
To make sure each nut is O. K.
(For safety, nuts *must* be O. K.)

• The Elves leap with glee as the Grip Nuts they see
These Grip Nuts that grip tight and *stay*.
While marching along, the Elves sing a song
"They're O. K.—They're O. K.—They're O. K."
(Yes, Grip Nuts are truly O. K.)

GRIP NUT COMPANY

310 SOUTH MICHIGAN AVENUE, CHICAGO 4, ILLINOIS

808

REGIONAL OFFICES: ST. PAUL – MINNEAPOLIS – ST. LOUIS – SAN FRANCISCO – CHICAGO – CLEVELAND – SALT LAKE CITY – SALISBURY, N. C. – PITTSBURGH – NEW YORK



Outstanding Efficiency
Proven Durability
KINNEAR ROLLING DOORS

Two "plus" features of Kinnear Motor Operated Rolling Doors that insure savings in time and economy of maintenance are interlocking-slat construction and Kinnear motor operation.

The heavy duty power unit goes instantly into operation when you touch the control button, assuring time-saving operation of the Kinnear Door. Remote control switches may be located at any convenient point, saving steps and heat, and increasing convenience.

The interlocking steel slats — originated 46 years ago by Kinnear — are both flexible (for ease in rolling) and rugged (to withstand the elements and years on hard usage). Kinnear Rolling Doors are also made with wood slats for special purposes, such as roundhouse doors, where acid smoke quickly corrodes metal. With either the steel-slat or wood-slat doors you can be assured of years of carefree service.

In addition to these advantages, the Kinnear Rolling Door opens out of the way; saves wall and floor space, clears ground obstructions and when closed provides a "prowler-proof" barricade. They are individually built to fit any opening — any size or shape — for either old or new buildings. Write to The Kinnear Manufacturing Co.

Factories: 2020-40 Fields Avenue, Columbus 16, Ohio, 1742 Yosemite Avenue, San Francisco 24, California.

Offices and Agents in Principal Cities

KINNEAR ROLLING DOORS HAVE MANY APPLICATIONS

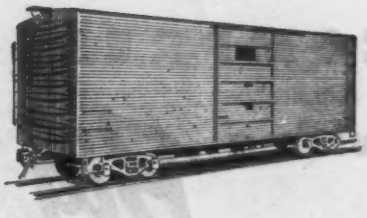
Roundhouse and Freight Sheds
Warehouses
Piers and Airplane Hangers
Truck Bodies
Powerhouses
Grain Elevators
many others

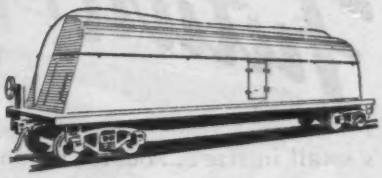
SAVING WAYS IN DOORWAYS

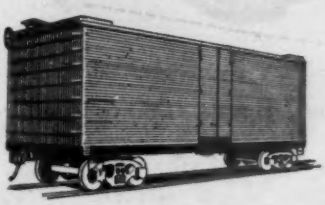
KINNEAR ROLLING DOORS

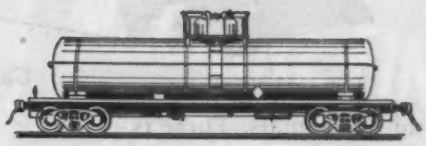
ALLOY STEEL FREIGHT CARS

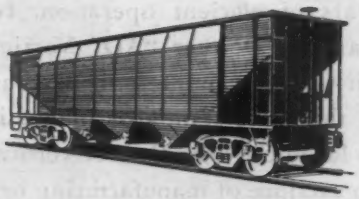
weigh less and last longer . .











. . . than the cars you used to buy

Ask the car superintendents on the roads that use alloy steel cars. They will tell you that rolling stock of alloy steel is still giving efficient service after many years of strenuous wear. They will also tell you that these box and open cars can carry two to five extra tons of freight, because of the favorable weight-load ratio of alloy steel cars.

Coal cars made of alloy steel not only carry extra tonnage, but their corrosion resistance assures longer life. Corrosion resistance is important in refrigerator cars too, for dampness and the brine used in refrigerating systems cut down the life expectancy of cars made of ordinary steel.

Where extreme corrosion resistance is required for the transportation of strong chemicals, stainless steel is the alloy steel used. In milk cars, stainless steel is chosen, because its easy-to-clean, permanently smooth surface protects the purity of milk.

Now that you are buying new equipment, be sure that the cars you choose are made of steels that have a record of long and profitable service. While we do not make steel, we have had 38 years' experience in the manufacture of the ferro-alloys that give alloy steels their special properties. If you have questions about alloy steels for railroad equipment, write to us for further information.

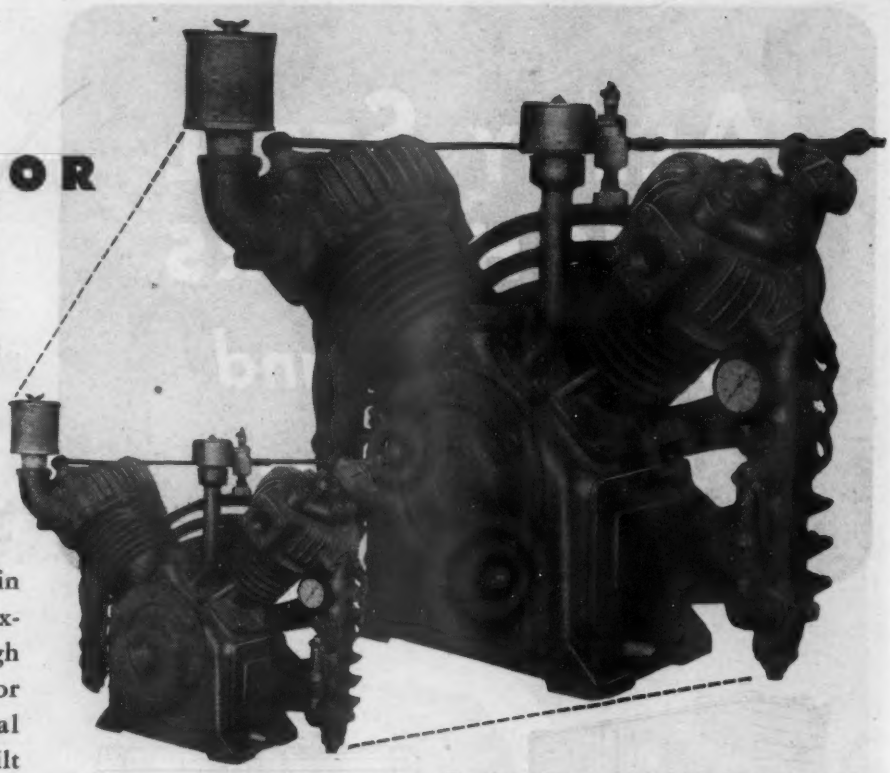
BUY UNITED STATES WAR BONDS AND STAMPS

ELECTRO METALLURGICAL COMPANY
Unit of Union Carbide and Carbon Corporation
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ELECTROMET Ferro-Alloys and Metals
are sold by Electro Metallurgical Sales Corporation, and
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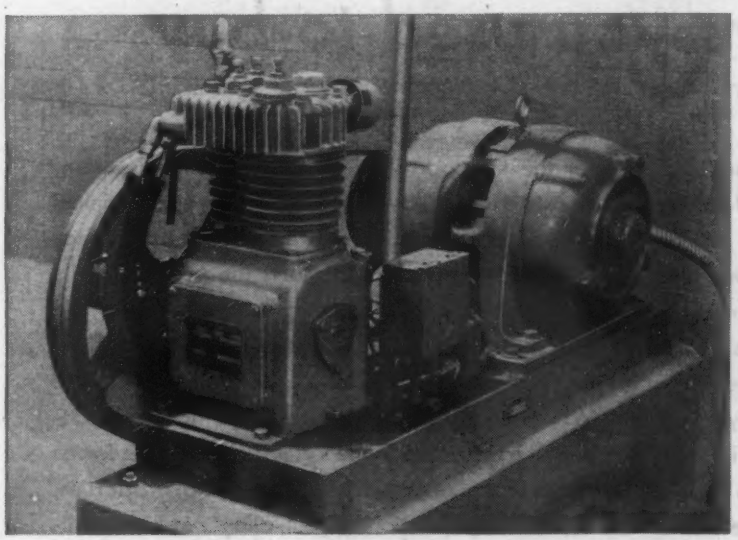
SMALL COMPRESSOR with a *Big Future!*



Gardner-Denver "ADS" Compressor

It's small in size . . . but it's big in performance . . . and you can expect big things from it through years of efficient operation. For Gardner-Denver "AD" Vertical Air-Cooled Compressors are built to the same standards of quality as large Gardner-Denver verticals and horizontals. There is no sacrifice of manufacturing or operating features.

These air-cooled compressors have many features that you'd expect to find only on large compressors, features such as:



- **Drop-forged alloy steel crankshaft with integral counterweights for smooth, quiet operation.**
- **"Air-cushioned" plate valves are silent in operation . . . prevent air leakage.**
- **Controlled splash-type lubrication assures adequate lubrication for all working parts.**
- **Crankshaft mounted on Timken tapered roller main bearings.**
- **Castings of GarDurloy—the special high strength alloy-iron—assure greater strength, longer life.**

For complete information on "AD" Compressors, the small compressors with the big future, write Gardner-Denver Company, Quincy, Illinois.



GARDNER-DENVER *Since 1859*



Quick Clean Cut Parts

with

MACHINE FINISH for Shaping Any Metal or Material



ALUMINUM
BRASS • IRON
STEEL • ZINC
LAMINATES
PLASTICS
FIBER
PLYWOOD
LUMBER

6 models—a size for every need. Complete with motors.



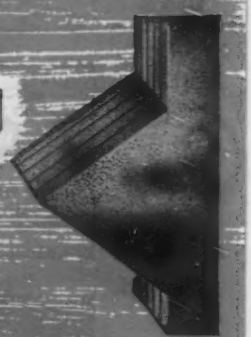
Send for illustrated book, DoALL versus 10 other Machining Methods.

CONTINUOUS CLEAN CUTTING

DoALL

WASTES NO MATERIAL







DoALL

INDUSTRY'S NEW SET OF TOOLS

CONTINENTAL MACHINES, INC.

1345 S. Washington Ave. • Minneapolis 4, Minn.

Sales & Service Offices: Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, El Paso, Erie, Grand Rapids, Hartford, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Orlando, Philadelphia, Pittsburgh, Providence, Reading, Rochester, Rockford, St. Louis, San Francisco, Seattle, Statesville, Syracuse, Toledo, Tulsa.



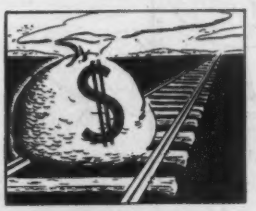
6 REASONS WHY

you should use Truscon *Weltrus Highway Crossings

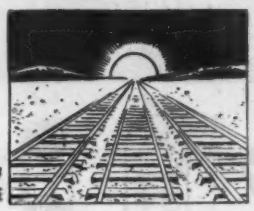
(NOT AVAILABLE UNTIL OUR WARTIME OBLIGATIONS ARE FULFILLED)



REDUCED CROSSING CLAIMS



SAVINGS IN MAINTENANCE



INCREASE LIFE OF TRACK STRUCTURE

● The major reason is safeguarding against injury claims resulting from faulty highway crossings. One such claim alone might pay for hundreds of miles of protection with Truscon Weltrus Highway Crossings. And five other important reasons illustrated here warrant your consideration of these efficient crossings, now used by many railroads.

Truscon Weltrus Steel Crossing sections are welded steel units which, when properly filled with concrete, provide crossing planks that are permanently smooth and require little or no maintenance. The units are so designed that concrete is reinforced and armored to guard against disintegration.

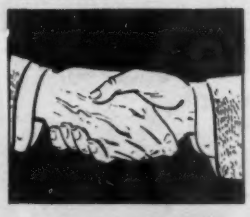
Dimensions of standard units are 6″ x 16¾″ x 6′ 0″, but units can be furnished in any required size. The units, being uniform in size and with the end sections identical, are interchangeable and require no special marking for installation purposes.

Write for catalog which contains specifications, construction details, views of installations and other useful data.

TRUSCON STEEL COMPANY

YOUNGSTOWN 1, OHIO

Subsidiary of Republic Steel Corporation



PROMOTE PUBLIC GOODWILL



REASONABLE COST



LONG SERVICE RECORD

TRUSCON

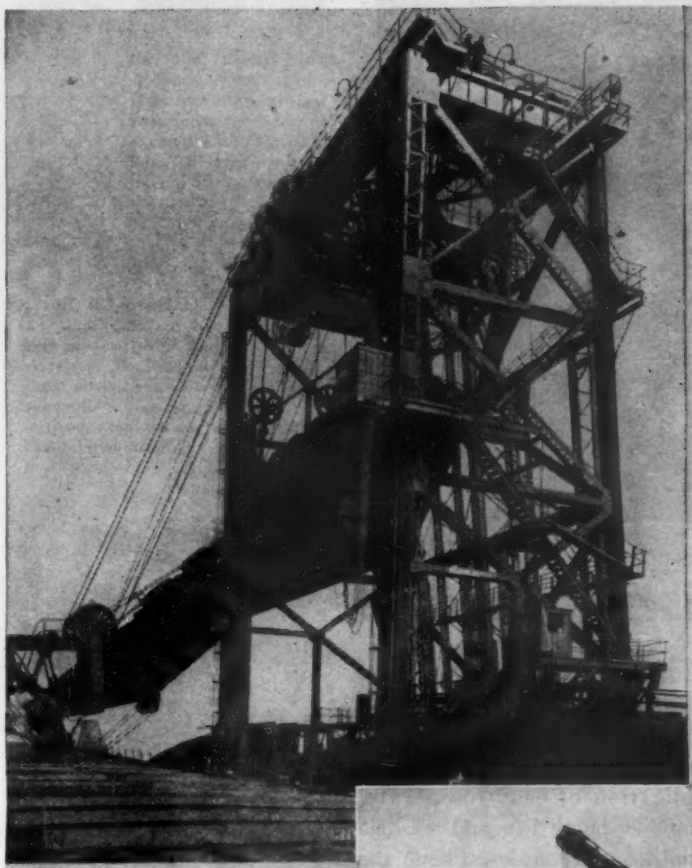
*WELTRUS HIGHWAY CROSSINGS



*Reg. U. S. Pat. Off.

DO YOU NEED RELIABLE EQUIPMENT TO MOVE MATERIALS ECONOMICALLY?

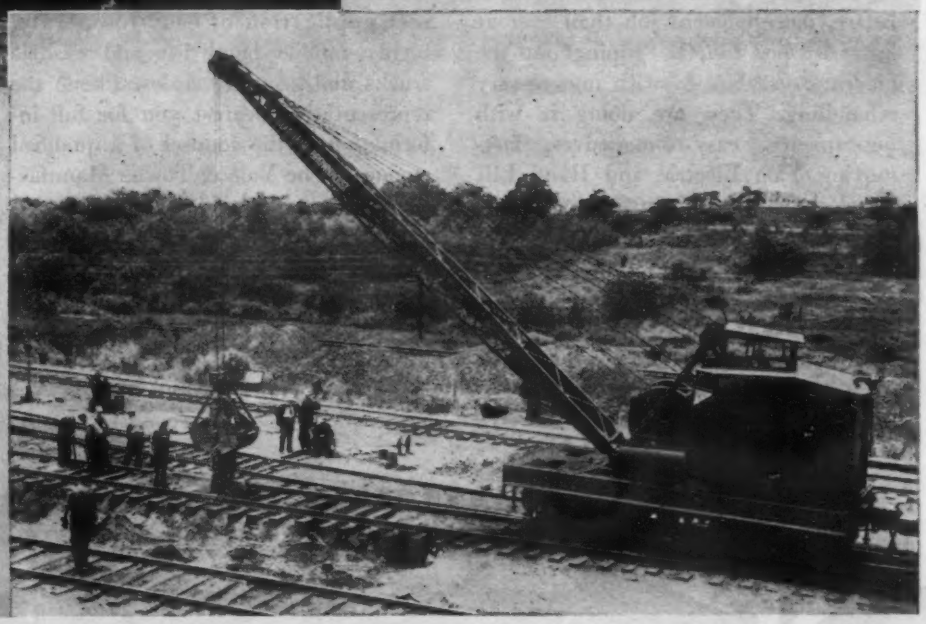




I-B EQUIPMENT WILL MEET YOUR NEEDS

What's your material handling problem? Tons of scrap iron that must be shuttled between railroad cars and blast furnaces? Big girders and steel plates that must be expertly swung into position for ship construction? Bulky coal and ore that must be swiftly transported from loading docks to boats or from boats to storage piles?

No matter what your particular material handling problem may be, I.B. equipment can solve it efficiently. Big, durable I.B. locomotive cranes, tower cranes, car dumpers, coal and ore bridges and pile drivers are doing outstanding jobs every day in scores of industries. Write for complete facts.



Above: This mammoth I.B. Great Lakes Type Car Dumper elevates 120-ton capacity coal cars and quickly dumps their contents into boat holds. This view shows the cradle with car in the maximum dumping position. Right: I.B. Locomotive Cranes are known the world over for their reliable, low cost operation with magnet, hook or bucket. Note the patented Monitor type cab which allows the operator 360° visibility.

INDUSTRIAL BROWNHOIST BUILDS BETTER CRANES

INDUSTRIAL BROWNHOIST CORP. • BAY CITY, MICH. • District Offices: New York, Philadelphia, Cleveland, Chicago • Agencies: Detroit, Birmingham, Houston, Denver, Los Angeles, San Francisco, Seattle, Vancouver, B.C., Winnipeg, Canadian Brownhoist Ltd., Montreal, Quebec.



Yale Electric Platform Lift Truck in action, cutting freight-handling costs by conserving worker energy and man-hours—lifting and transporting multi-unit loads safely at a fast pace to keep up with the needs of the military, of industry, of civilians.



Yale Electric Industrial Trucks save time and effort—are power-packed to speed the movement of tremendous tonnage per day—travel fast and maneuver easily in congested areas. High lift models save storage space.



Yale Hand Lift Trucks are ruggedly built for long life—provide easy lift, easy roll, easy steer—take the shorter hauls at a fast clip. Wide range of models and capacities for efficient handling of skids, skid bins, and pallets.

YALE moves freight *fast—cuts costs*

Handling freight is no pigmy task at any time—much less so now with mountains of goods pouring into terminals day after day. But many railroads are doing a better, more efficient job than ever at less cost per ton, by wiping out the *hidden costs* that go with unnecessary rehandling. They are doing it with big-capacity, easy-to-maneuver, fast-moving Yale Electric and Hand Lift Trucks working right in freight cars, in warehouses and on loading platforms.

As headquarters for modern, cost-cutting "safety first" materials handling machinery, Yale can help you uncover and erase *hidden costs* through the correct application of easy-to-operate, highly mobile hand lift and electric trucks and accurate scales. Phone the representative nearest you for full information or the counsel of a qualified engineer. The Yale & Towne Manufacturing Company, 4530 Tacony Street, Philadelphia 24, Pa.



Kron Springless Dial Scales, made by Yale, eliminate excessive time and money-wasting handling operations, provide accurate, efficient, low-cost weighing and counting of all kinds of materials. Available in all types from bench to crane scales.

RAILWAY REPRESENTATIVES

NEW YORK 17, N. Y.
Eastern Railway Supplies, Inc.
110 East 42nd Street

CHICAGO 1, ILL.
The Earl E. Thulin Co.
Suite 339, Hotel Sherman

WASHINGTON 5, D. C.
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Metropolitan Bank Bldg.

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923 Midland Bldg.

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Robert J. Wylie,
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ST. LOUIS 3, MO.
Clarence Gush,
2232 Olive Street

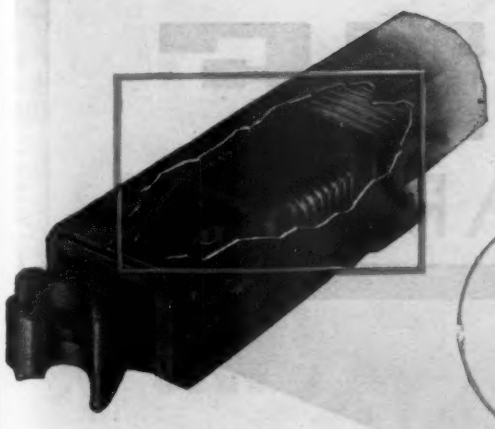


HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES



TWIN CUSHIONS, TOO, GROW STRONGER WITH EXERCISE

That Waughmat Twin-Cushions improve with active age has been well demonstrated by exact laboratory tests. Twin Cushions were subjected to extensive testing under the 27,000 lb. AAR Drop Hammer. After thousands of impacts Twin-Cushions showed an *increase* in capacity. These results are substantiated by records of Twin-Cushions in service. Waughmat Twin Cushions provide exceptional and increasing protection to lading and rolling stock.



WAUGHMAT *Twin Cushions*
ELIMINATE JERKS AND JARS

Waugh Equipment Company, New York, Chicago, St. Louis • *Canadian Waugh Equipment Company, Montreal*



Then and now!

Rebuilding the nations of the world will depend as much on railroad transportation as does the war. Men and materials will continue to move from mine and factory, but for a different purpose: *construction* not *destruction*. Many of the locomotives pulling supply trains and the cars themselves will roll on SKF Bearings—then as now. A bearing that puts Performance first is first on the specification sheets anytime.

5798

SKF INDUSTRIES, INC., PHILA. 34, PA.

SPECIFY

SKF

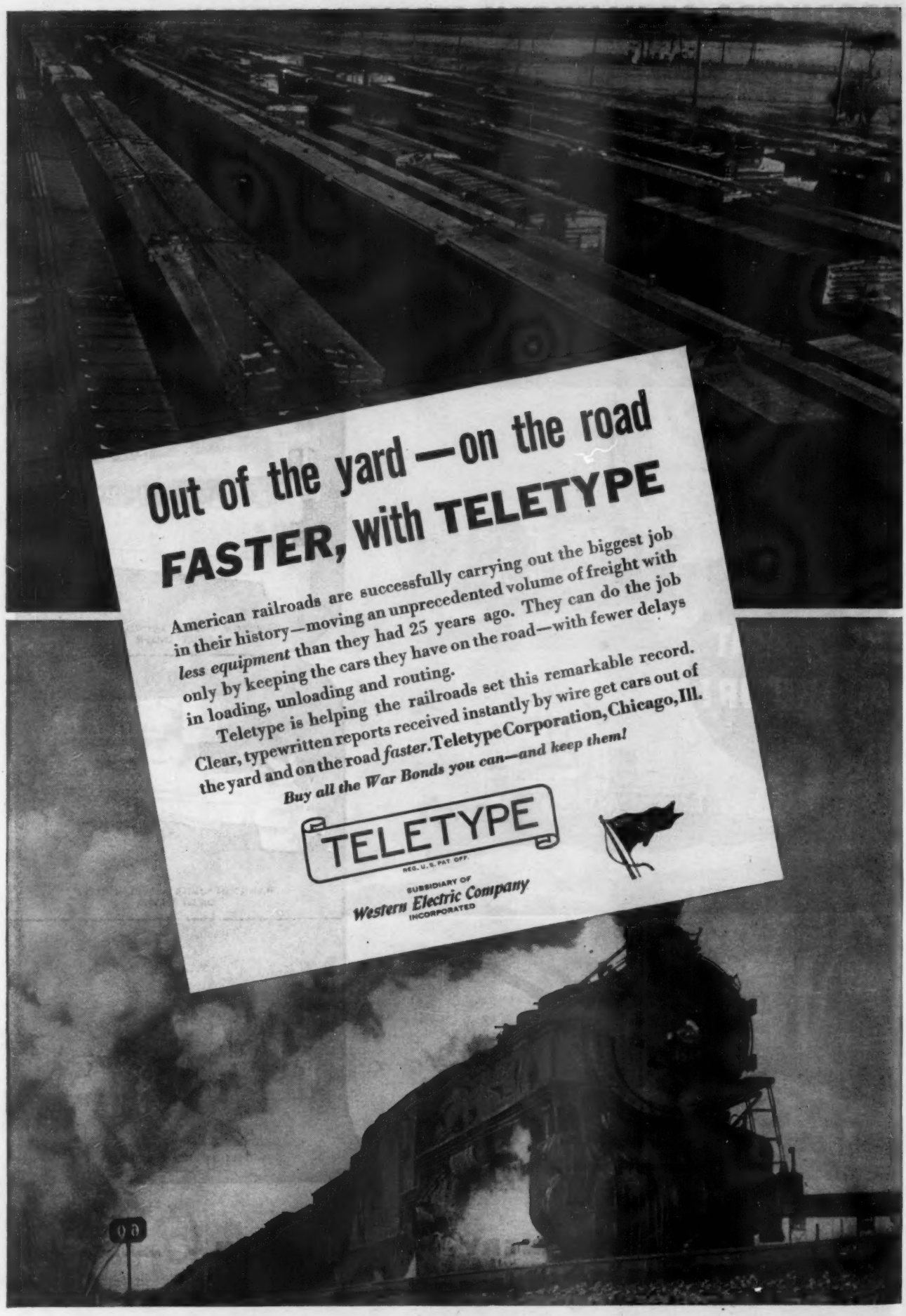
BEARINGS

PRODUCERS OF HAMILTON STEAM AND DIESEL ENGINES, CANNON AND THE MACHINE TOOLS TO MAKE THEM



GENERAL MACHINERY CORPORATION • HAMILTON, OHIO

THE NILES TOOL WORKS CO. • THE HOOVEN, OWENS, RENTSCHLER CO. • GENERAL MACHINERY ORDNANCE CORPORATION



Out of the yard—on the road FASTER, with TELETYPE

American railroads are successfully carrying out the biggest job in their history—moving an unprecedented volume of freight with *less equipment* than they had 25 years ago. They can do the job only by keeping the cars they have on the road—with fewer delays in loading, unloading and routing.

Teletype is helping the railroads set this remarkable record. Clear, typewritten reports received instantly by wire get cars out of the yard and on the road *faster*. Teletype Corporation, Chicago, Ill.

Buy all the War Bonds you can—and keep them!

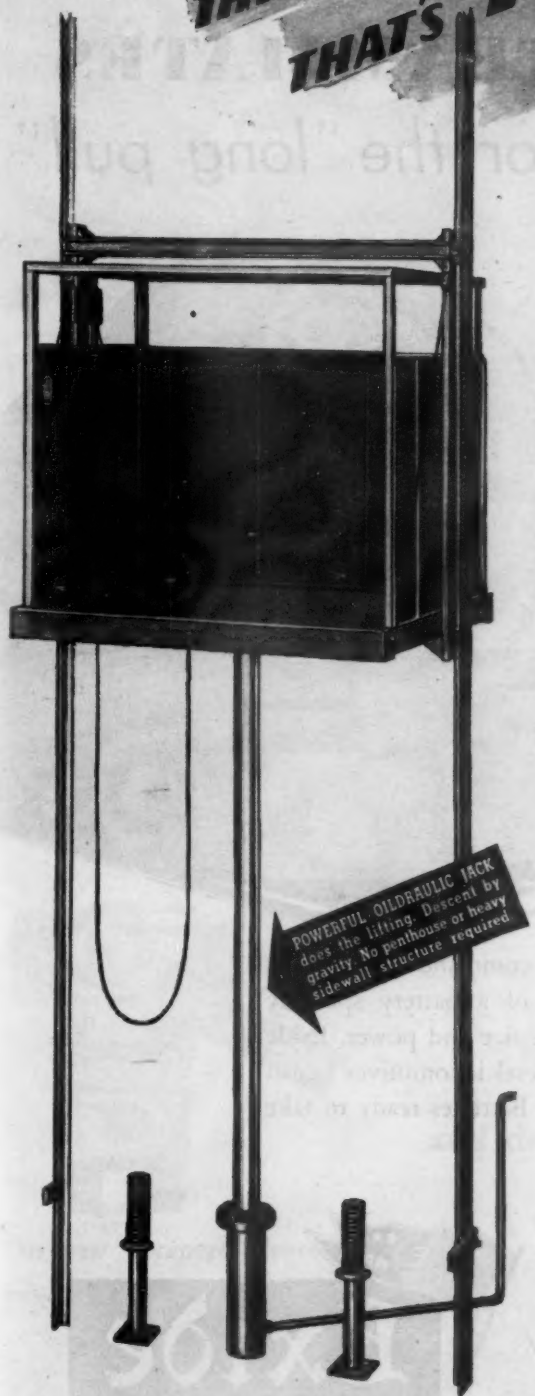
TELETYPE

REG. U. S. PAT. OFF.

SUBSIDIARY OF
Western Electric Company
INCORPORATED

THIS ELEVATOR THAT'S PUSHED UP

Is the Most Economical For 2, 3 or 4-Story Service



Oildraulic Elevators are simple and economical to install in new construction or existing structures. Because the elevator car is pushed up from below—not pulled up from above—costly penthouses are eliminated, heavy load-bearing supporting columns in shaftway walls unnecessary. And no need for a special machine room with an Oildraulic Elevator . . . the compact electric hydraulic power unit can be located in any convenient space.

Money Saved 3 Ways

This modern elevator (for freight or passenger service) is raised by a relatively simple hydraulic transmission system, powered by an electric oil pumping mechanism—so initial cost is low. Operating cost is low too . . . power used only when elevator rises, descent by gravity. And there's little maintenance expense, even after years of service, due to the simple mechanism and the operation of moving parts in a bath of oil.

Smooth and Accurate Performance

Important considerations in selecting an elevator are smoothness of operation and accuracy of landing stops. The operation of the Oildraulic Elevator has been so perfected that there are no abrupt starts or stops. Action is "hydraulically" smooth. Landing stops are accurate to within ¼ of an inch, plus or minus—and this is particularly important on freight elevators because of the increasing use of powered vehicles for material handling.

Railroads Turn to Oildraulic Elevators

Leading railroads are speeding the handling of baggage and freight with Oildraulic Elevators. The Illinois Central System has purchased three Oildraulics in recent months because of their definite advantages over other types of elevators. These modern elevators are "tailor made" to meet the specific needs of railroads. They are the result of Rotary Lift Company's experience in building over 40,000 lifting devices during the past twenty years. bring you complete information.

If you have an elevator problem involving a rise of 40 feet or less, Rotary can help you. The coupon below will bring you complete information.

Representatives in all key cities, Canada and Mexico



MAIL COUPON FOR BOOKLET CONTAINING ALL THE FACTS ON THIS MODERN ELEVATOR

ROTARY LIFT COMPANY
1042 Kansas, Memphis (2), Tenn.
Please send Catalog RE-301 to:

Name.....

Address.....

City and State.....

Rotary

OILDRAULIC ELEVATORS

ROTARY ALSO MAKES OILDRAULIC LEVELATORS — LUMBER LIFTS — AUTO AND TRUCK LIFTS

EXIDE POWER DIESEL POWER

TEAMMATES
. . . for the "long pull"



BACK in the days when Diesel engines first commanded attention, Exide engineers began the development of a battery specially designed for Diesel cranking. As Diesels grew in size and power, Exide development kept pace. And when the great Diesel locomotives began roaring over the rails there were powerful Exide Batteries ready to take on the cranking job.

Today, on many of America's busiest railroads, Exide Batteries are performing a multitude of tasks—cranking Diesels, powering the signal and train telephone systems, lighting and air-conditioning passenger cars, etc. And wherever Exides are used, they are performing dependably, with long-life and ease of maintenance. When you buy an Exide, you *Buy* to *Last*.

ARMY E NAVY

Exide BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

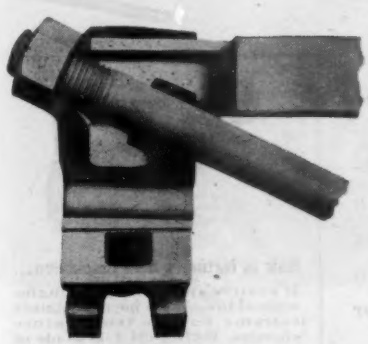


SLEEVE HEADS

reduce freight train delays

The Sleeve Brake Head surrounds the tension rod and distributes service stresses over the entire distance between brake head and fulcrum.

This distribution of stresses prolongs rod life and decreases damage and delays to freight trains . . . a vital objective today.



This new approved sleeve incorporated into Standard A. A. R. head

CHICAGO RAILWAY EQUIPMENT COMPANY
McCormick Building, Chicago

Over 3,500,000 Sleeve Brake Heads are now in service

HAIRINSUL IS PERMANENT INSULATION



OUTLASTS the CARS it INSULATES!

HAIRINSUL never settles, never pulverizes or develops ice-wasting spaces in your refrigerator cars. It keeps its high insulating efficiency *permanently* . . . dries out good-as-new after repeated soakings . . . never rots, molds or decays. HAIRINSUL is *all-hair in blanket form*, recognized as the best form for greater ice-saving efficiency over a longer period of time. Flexible, easy to install in new or rebuilt cars . . . and you can get it now. Send today for samples and complete engineering data.



Hair Is Nature's Own Insulation...

It's nature's protective covering for animal life...it's a barrier against extreme outside temperature changes. HAIRINSUL is made of animal hair...one of the best reasons why HAIRINSUL is accepted as the finest of all insulating materials for refrigerator cars.

AMERICAN HAIR & FELT COMPANY
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ALL HAIR INSULATION FOR REFRIGERATOR CARS

LOOK TO SYMINGTON-GOULD FOR DEPENDABLE PERFORMANCE



COMPOSITE ARTICULATED JOURNAL BOX LID

"COIL-ELLIPTIC" SPRING GROUP

TYPE "SBS" TRUCK SPRING SNUBBER

SWIVEL SHANK COUPLER AND YOKE

DOUBLE TRUSS SELF-ALIGNING SPRING PLANKLESS TRUCK

PROVED *Designs*

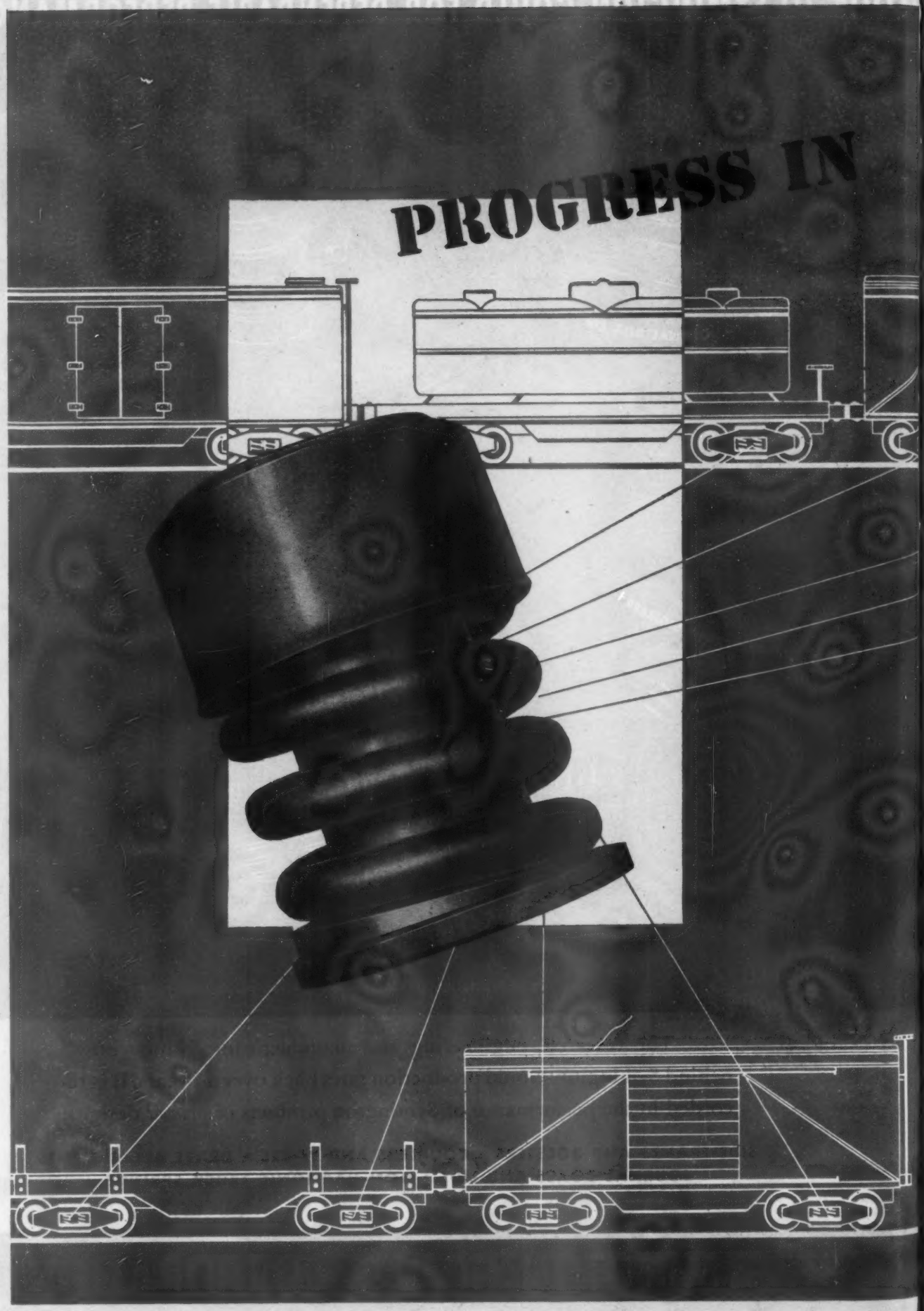
The research, engineering and manufacturing "know how" behind Symington-Gould production goes back over 44 years. It is recorded in the performance of Symington products of *proved* designs:

SIDE FRAMES AND BOLSTERS • COUPLERS AND YOKES • DRAFT ATTACHMENTS
JOURNAL BOXES AND LIDS • NON-HARMONIC TRUCK SPRINGS

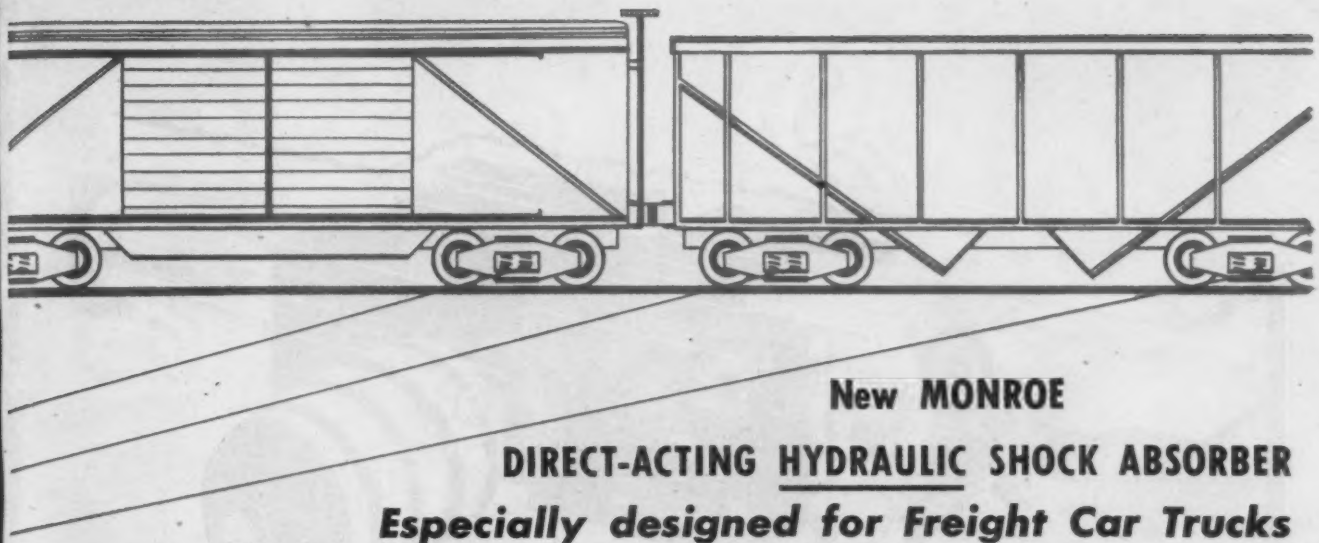
THE SYMINGTON-GOULD CORPORATION

Works ROCHESTER & DEPEW, NEW YORK

New York • Chicago • St. Louis • Baltimore • Boston • San Francisco • In Canada ADANAC SUPPLIES, LTD., Montreal, Que.


PROGRESS IN

SHOCK CONTROL



New MONROE
DIRECT-ACTING HYDRAULIC SHOCK ABSORBER
Especially designed for Freight Car Trucks

Progress in land transportation has always been dependent on progress in devising means for cushioning the jolts and shocks of wheeled travel.

Ancient carts rode directly on the axle. "Shock absorbing" (if any) was by means of cushions or straw. Riding was little pleasure. *Fast* riding was "out".

Eventually, somewhat faster, more comfortable travel evolved following development of coil, leaf and elliptical springing for horsedrawn carriage bodies and seats.

Early railway and automotive vehicles utilized the same means for cushioning shocks—later were improved by the application of "snubbers". Then higher speeds and greater riding comfort were made possible by the advent of the *Hydraulic* Shock Absorber.

Monroe *Hydraulic* Shock Absorbers were installed on the crack streamliners in 1938 and since then have operated successfully over millions of trouble-free railway miles.

Founded 28 years ago, Monroe has established itself as source of the finest, most advanced types of shock absorbers. Now comes NEW progress ... the MONROE DIRECT-ACTING *HYDRAULIC* SHOCK ABSORBER ... especially designed for freight cars. This rugged, dependable, new Monroe unit is *now available for freight car rehabilitation.*

Easily and quickly installed (simply replaces one truck spring in the cluster) it effectively cushions jolts, checks vibration and lateral sway ... protecting lading, equipment and roadbed ... reducing maintenance costs and damage claims.

Installation soon pays for itself ... in fact, soon pays substantial *profits* ... through the multiple savings effected.

INVESTIGATE!

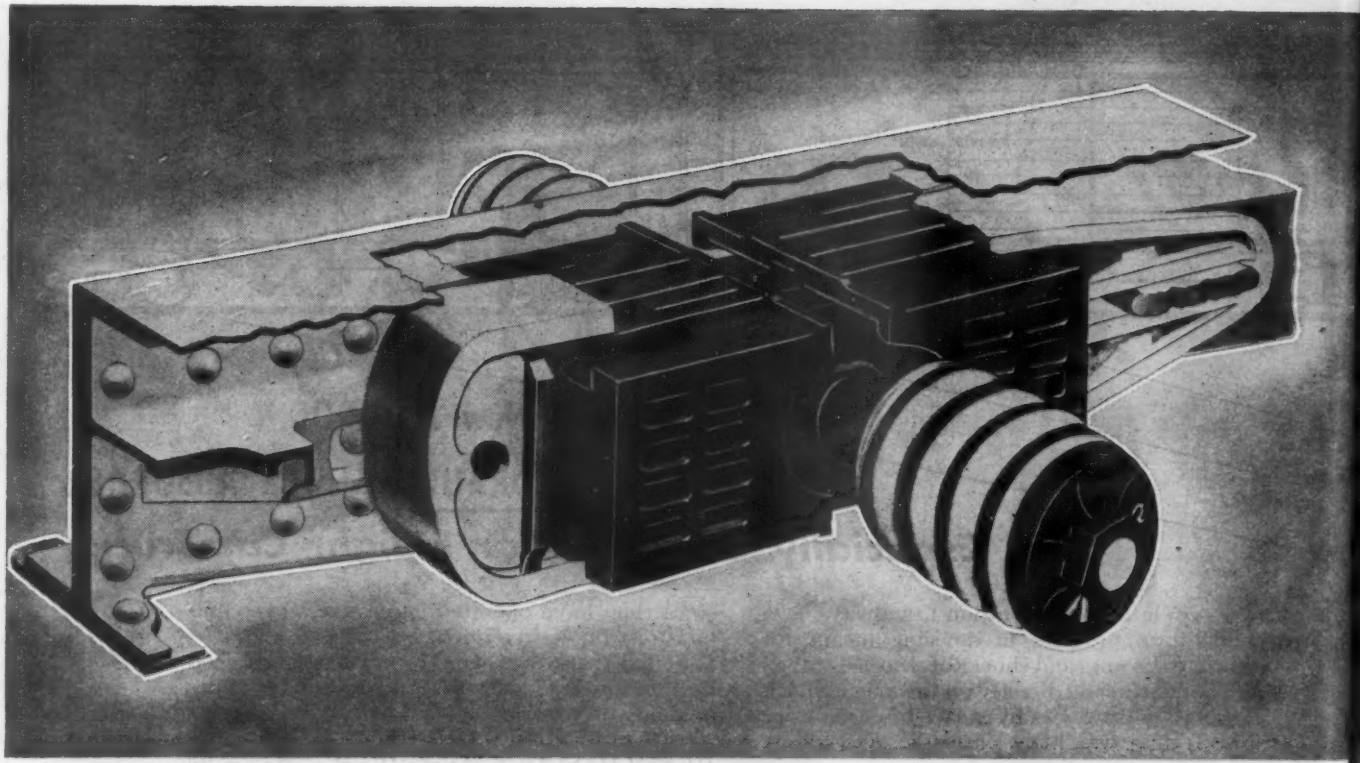
Our engineers will gladly supply further details on the new MONROE DIRECT-ACTING *HYDRAULIC* SHOCK ABSORBER and its application to railway freight car problems—present and future.

RAILWAY SUPPLY DIVISION

MONROE

MONROE AUTO EQUIPMENT CO. . . MONROE, MICH.

Don't "Pass the *to the Couplers.*



Cardwell Friction Draft Gears

Absorb and Dissipate Shocks at the Couplers

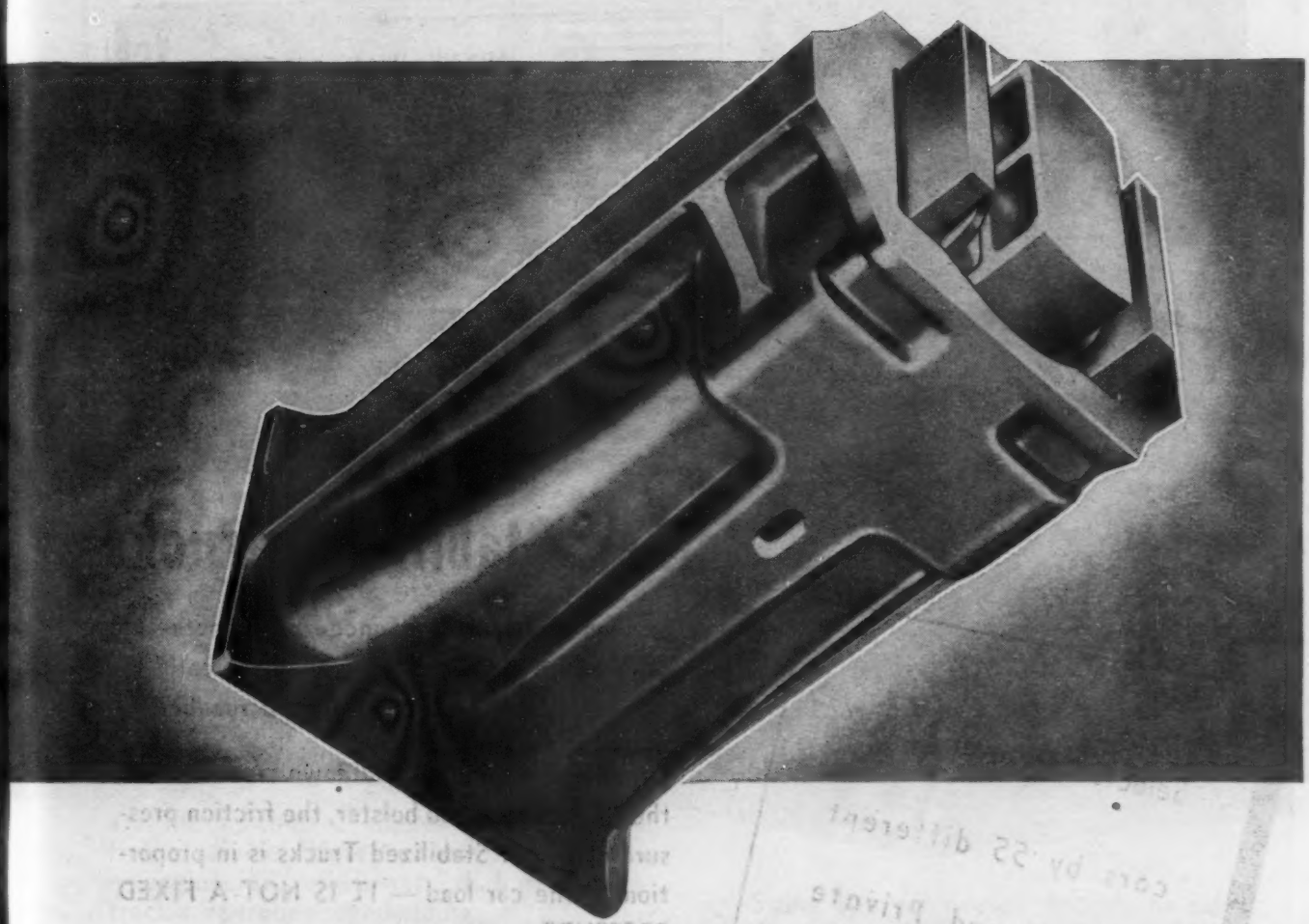
Modern Friction Draft Gears protect the entire car and lading from coupler to coupler . . . from rail to roof.

Over 98% of the cars in freight carrying service are A.A.R. construction, and over 96% have Friction Draft Gears.

1028

Shocks"

Underframe, Car Structure and Ladings



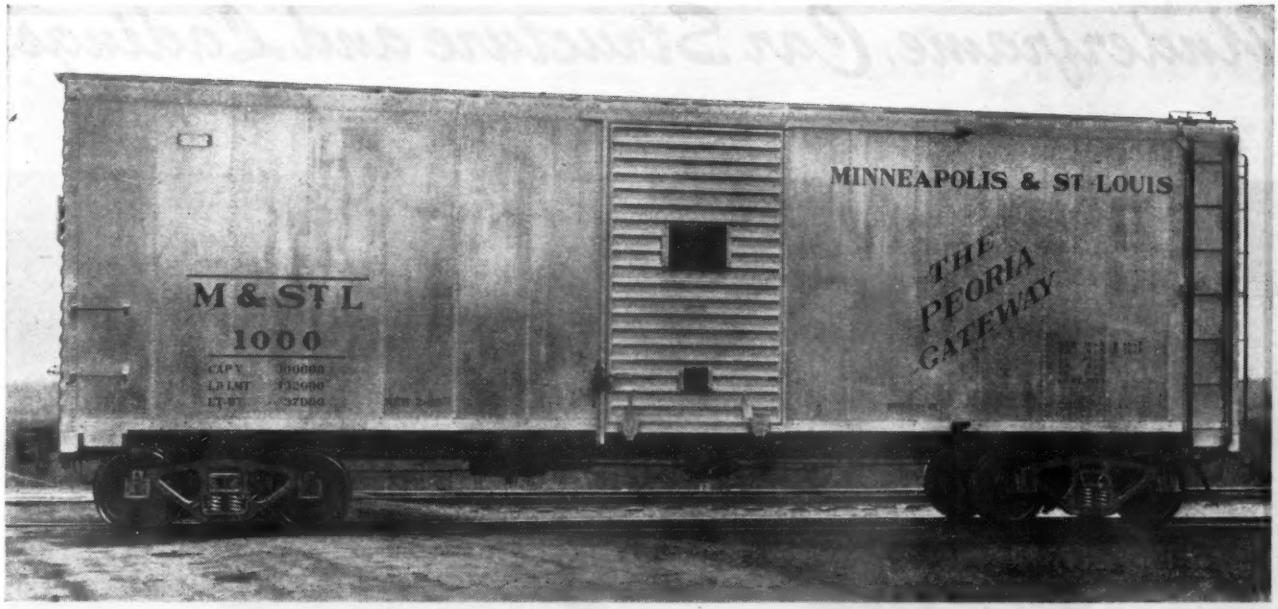
Westinghouse Friction Draft Gears

Absorb and Dissipate Shocks at the Couplers

Modern Friction Draft Gears are, and continue to be, an evolution of design and experience resulting in developments which have more than kept pace with the unparalleled progress of Railroading.

Cardwell Westinghouse Co., Chicago
Canadian Cardwell Co., Ltd., Montreal

Modern Trucks for



Barber Stabilized Trucks

Selected for over 92,000 cars by 55 different Railroads and Private Car Lines.

cushion destructive bounce and smooth-out the ride of the car thereby adding greatly to the life of equipment, lading and roadbed.

Damping both the up and down movement of the spring supported bolster, the friction pressure of Barber Stabilized Trucks is in proportion to the car load — IT IS NOT A FIXED PRESSURE.

With only slight changes in the bolster and side frame, a spring grouping with 2½" travel can be substituted for A.A.R. springs.

For Modern Operation

STANDARD CAR

332 S. MICHIGAN AVENUE

High-Speed Freight Cars

Barber Swing Hanger Trucks



are the up-to-date answer for high-speed freight service. Here are some of the soundly engineered refinements that make this truck's operation outstanding:

1. Load carrying springs directly over oil boxes.
2. Spring action controlled by contact of friction castings on hardened steel wear plates applied to inside of pedestals.
3. Swing hangers carried directly by side frames.
4. No heavy, expensive transom required.
5. An easy ride is assured because shocks are absorbed by frictional device at journal box.

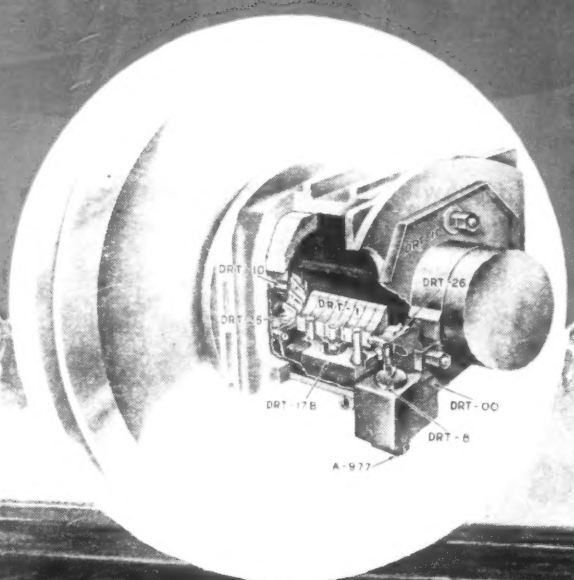
Specify Barber Trucks

TRUCK COMPANY

CHICAGO 4, ILLINOIS

HENN

OIL LUBRICATED DRIVING JOURNAL PERFORMANCE

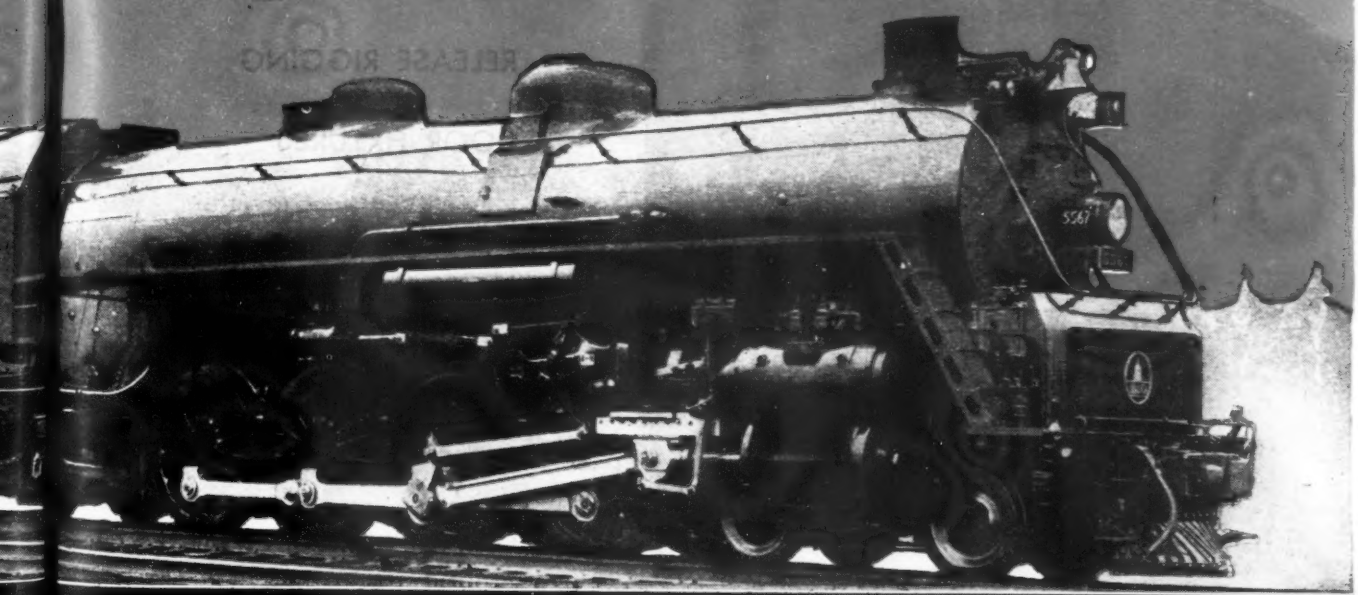


HENNESSY LUBRICATOR

ESSY

A group of 19 of these engines, fully equipped with Hennessy Mechanical Lubricators on lead truck, driver, trailer and tender journals, is making outstanding records in fast freight service. Some of these locomotives have made in excess of 300,000 miles without having any repairs made to driving boxes or journals.

Performance of this kind is very exceptional and savings resulting are certainly worth while.



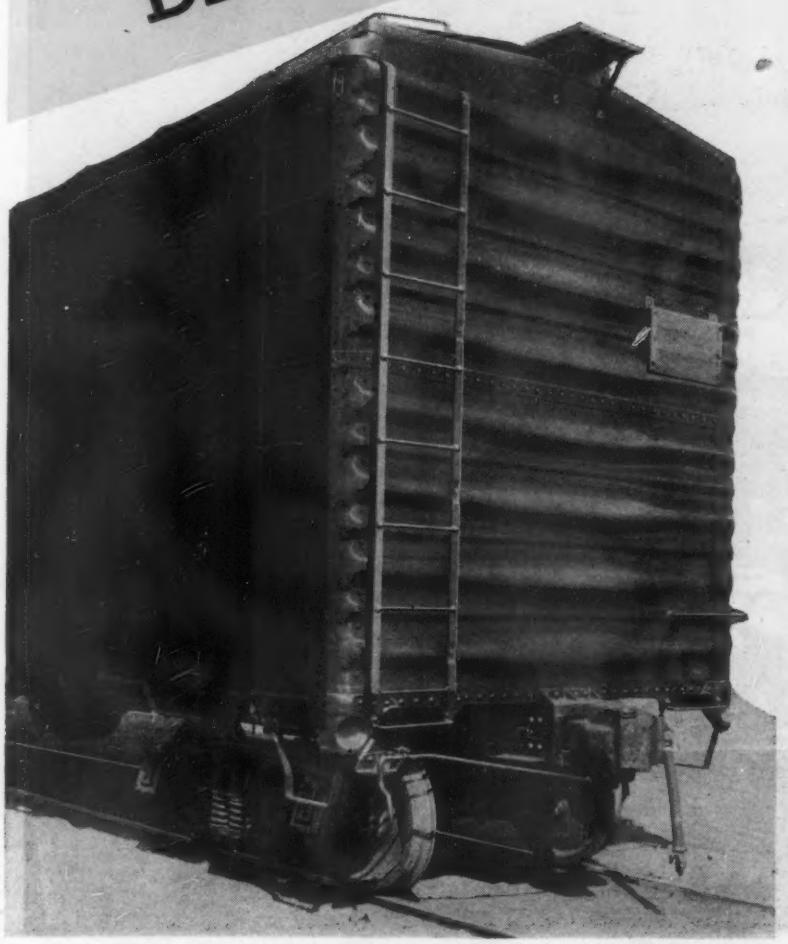
CO., Inc.

75 WEST STREET
NEW YORK 6, N. Y.

STANDARD PRODUCTS

DEPENDABLE, RELIABLE

IMPROVED DREADNAUGHT END



ALSO

COUPLER CARRIERS

RELEASE RIGGING

DOOR FIXTURES

FLOOR PLATES

SIDE PLATES

HOPPER DOORS

PANELED SIDES

GONDOLA DROP DOORS

REFRIGERATOR CAR PARTS

MURPHY IMPROVED RIVETED ROOF



"PROGRESS" IN IMPROVED FREIGHT CAR DESIGN IS EVIDENCED BY THE INCREDIBLE JOB THE RAILROADS ARE DOING IN TRANSPORTING THE TREMENDOUS QUANTITY OF MATERIAL REQUIRED TO CARRY ON THIS WAR.

STANDARD RAILWAY EQUIPMENT MFG. COMPANY

HAMMOND, INDIANA

WORKS: HAMMOND, INDIANA — NEW KENSINGTON, PA.

CHICAGO OFFICE—310 S. MICHIGAN AVE.



Oxweld Can Help You

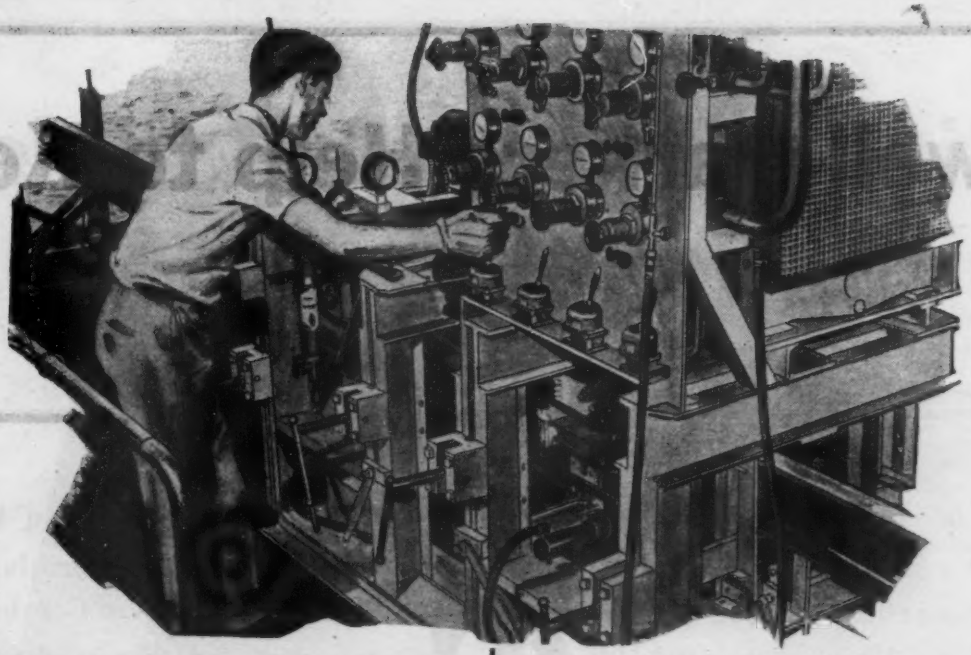
THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation

UCC

Carbide and Carbon Building Chicago and New York

BUY UNITED STATES
WAR BONDS AND STAMPS

SINCE 1912—THE COMPLETE OXY-ACETYLENE

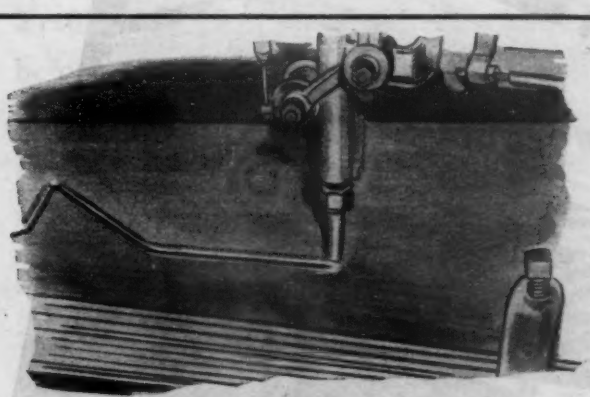


Make Wearing Parts Last Longer

with oxy-acetylene flame-hardening. The process imparts a wear-resistant case without affecting the toughness or ductility of the core.

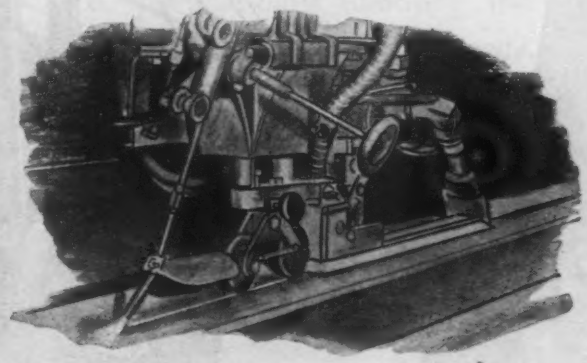
Eliminate Joint Maintenance

by pressure-welding rail to form continuous, smooth-riding surfaces — in tunnels, road crossings, and bridges, as well as in open track.



Cut Identical Parts Rapidly

and economically by flame-cutting tightly clamped piled plates. Parts have clean, smooth edges that usually require no machining.



Join Steel Up to 20 Times Faster

than with other fusion methods with UNIONMELT automatic welding — an efficient tool for either fabrication or repair of equipment.

Make These Savings



The word "Unionmelt" is a registered trade-mark of The Linde Air Products Company

SERVICE FOR AMERICAN RAILROADS

Elwell-Parkers Help to Keep



How one Road Speeds War Freight While Preparing for Record Volumes of Peacetime Traffic

● This Elwell-Parker Crane is working day and night in one of America's largest Freight Transfer Terminals. Illustration shows method of handling a crated submarine casting from gondola to boxcar. Other typical loads include steel consigned to a war plant, transferred within minutes from car to highway truck and speeded on its way; frogs, crossings and track supplies; and l. c. l. merchandise of all descriptions.

Freight Rolling at Capacity —*Now and Postwar*

CAN prewar freight warehouse equipment measure up to postwar demands? There is serious doubt whether the pre-1941 facilities for getting freight into and out of cars are sufficient to enable the Railroads to maintain their well-earned wartime status.

Traffic movement must not be choked before freight leaves the terminal warehouse. Otherwise, costly new locomotives and cars—operating at passenger speeds—cannot pay their way.

A half-hour lost in loading can lose 25 miles enroute. If as little as 30 minutes be wasted in loading a train scheduled to run at 50 miles per hour, *25 miles are lost* before the cars so much as start.

Properly-designed Trucks pay dividends. Elwell-Parker Trucks—especially designed to suit the commodity, yet handling general lading—can reduce your loading costs tremendously. These Trucks will enable you to facilitate the "shipment-on-pallets-system" now gaining wide acceptance.

Re-investigate the possibilities of utilizing Elwell-Parker Systems more extensively than ever before—not only to speed freight handling but to reduce Costs, Claims and Hazards.

Our Representatives in Main Line Cities will bring you Elwell-Parker's broad experience in applying newest type Power Industrial Trucks and Cranes to your Locomotive and Car Shops, Roundhouses, Terminals and Stores Departments. They are ready to help you—today.



The Elwell-Parker Electric Company, 4250 St. Clair Ave., Cleveland 14, Ohio

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

1918

405 BILLION TON-MILES OF FREIGHT

TOPS in World War I



TOPS (*so far*) in World War II

1944

738 BILLION TON-MILES OF FREIGHT

SINCE Pearl Harbor, a miracle in transportation has been performed by the American Railroads — a most vital weapon of War. Without them the nation would be sunk. In 1941 — it was 475 billion, in 1942 — 637 billion, in 1943 — 727 billion and — 738 billion ton miles of freight handled in 1944. This compares with 405 billion ton-miles the peak freight traffic during World War I. Rail transportation in World War II is especially miraculous because record-breaking performances are being made with virtually one-third less locomotives and cars — and new equipment and manpower very much limited.

The Progressive Improvement of Rail Joints Contributed to This Splendid Performance.

THE RAIL JOINT COMPANY Inc.

50 CHURCH ST. NEW YORK 7, N. Y.



THE R.B.E.

A PREVIEW OF TOMORROW'S TRANSPORT PICTURE

Though it proved nothing that seasoned truckers didn't already know, it took the urgency of invasion and the famous R. B. E. (Red Ball Express) to show the world the stamina and ability of motor transport units in their true light. Across France to Germany's front door . . . twenty-four hours a day, radiator to taillight at forty miles an hour, rolled this relentless fleet ★ Here, where the slightest miscue meant confusion all along the line, Bendix-Westinghouse Air Brakes performed like the champions they are. For here, on all except the lightest vehicles, Bendix-Westinghouse Control was the Army standard. Thanks to the perfection of this "Safety Standard of the World" the full might of the Allied cause arrived on perfect schedule ★ Fully conscious of the still greater peacetime burden ahead, Bendix-Westinghouse, fortified with the priceless experience of wartime accomplishment, will as ever lead the field in safety, dependability and economy of control which could only come from years of leadership in design and manufacture of devices which must not fail ★ Your nearest authorized Bendix-Westinghouse distributor will be pleased to explain the many exclusive advantages Air Brakes hold for your specific service.

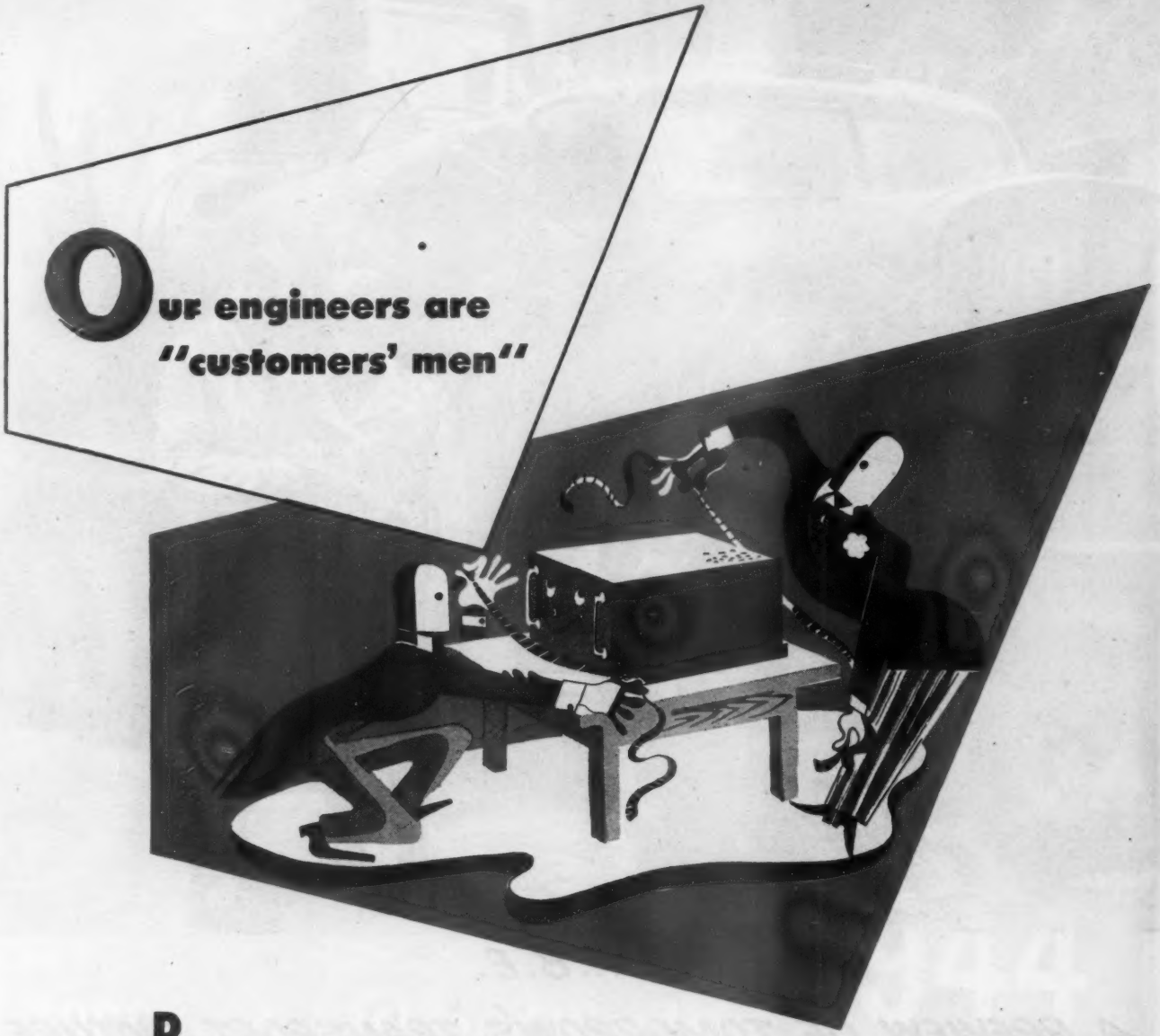
Bendix-Westinghouse

AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE AIR BRAKES

Our engineers are "customers' men"



Railroad radio needs to be tailor-made to fit individual operating conditions. **Aireon** makes it a practice to measure a road's requirements before making recommendations. That's why we call our engineers "customers' men." **Aireon's** pre-analysis approach to each installation pays off to your benefit from our exact knowledge of the performance characteristics and limitations of the space and inductive systems, *both* of which **Aireon** manufactures. This is your assurance of a practical two-way voice communication system of true telephonic quality. **Aireon's** Railway Equipment Division sells only two-way voice communication for railroads. Headed by a railroad man who speaks your language, it is staffed by electronic engineers who know radio and have applied their knowledge to everyday railroad practice. Our laboratory car is in readiness to give you a first hand demonstration of **Aireon** two-way voice communication on your own road.

Aireon

MANUFACTURING CORPORATION

Formerly *AIRCRAFT ACCESSORIES CORPORATION*

Radio and Electronics • Engineered Power Controls

NEW YORK • CHICAGO • KANSAS CITY • BURBANK

Eliminate drilling and tapping studs with NELSON STUD WELDING!





Nelson Stud Welding saves time and material because studs are end-welded to metal without drilling or tapping to secure them. Uniform welds, with full fillet, result every time . . . complete fusion between the stud and metal is obtained in ½ second.

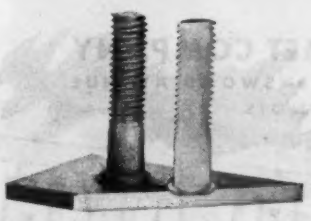
The Nelson Stud Welder is *fully automatic* and completely portable. Light in weight and easy to use, it welds effectively in any position. Or it may be operated as a production unit from a fixed jig. Thousands of these automatic welders are now being used in more than 650 industrial plants. No previous welding experience is necessary.

Write today for complete details about the Nelson Stud Welder, catalog and price list.

After layout and centerpunching the studs are welded to the metal. The stud is inserted in the gun chuck, the trigger pulled and a complete, full-fillet weld results. Operators can weld from 500 to 1500 studs in eight hours without difficulty. A template may be used if desired.



Inspection covers are an excellent application for stud welding because the studs are easily and accurately located without drilling and tapping. Welds are as strong as those made by any other method.



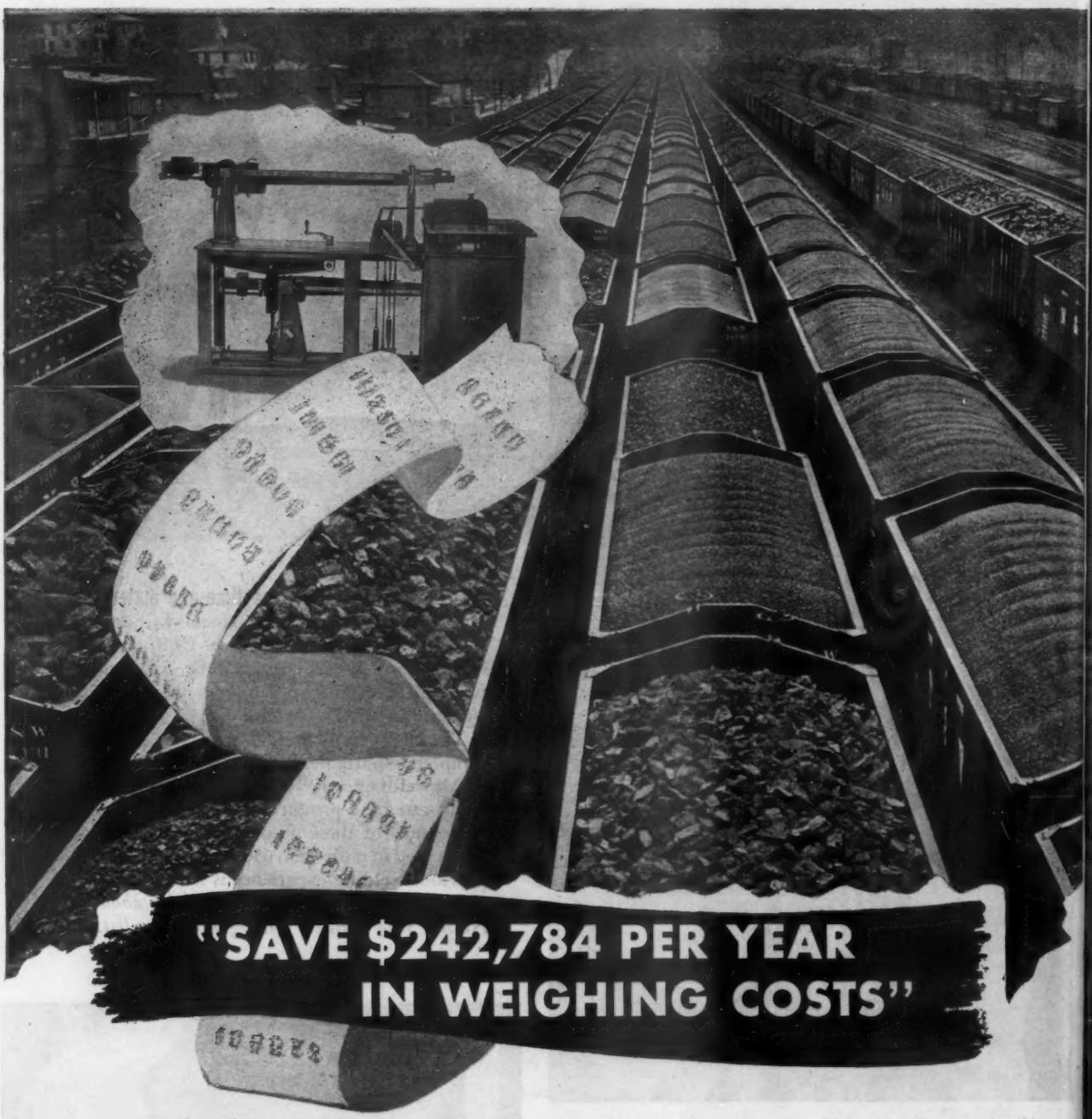
Cutaway view of stud after welding and etching with Nital shows the complete fusion of the stud to metal. Fillet is not only around outer surface of the stud but weld is a complete fusion of the stud to metal.

For complete details, prices and catalog write:

NELSON SPECIALTY WELDING EQUIPMENT CORP.

Dept. RA, 440 Peralta Avenue, San Leandro, Calif.

Eastern Representative: Camden Stud Welding Corp.
Dept. 122, 1416 South Sixth Street, Camden, N. J.



"SAVE $242,784 PER YEAR IN WEIGHING COSTS"

SUCH A SAVING is a practical possibility . . . through the aid of a Streeter-Amet Automatic Recorder. As many as 2500 cars per day can be weighed on one S-A Recorder. If your cost per hour of engine and crew is $10 per hour, huge savings like the above can be made over hand weighing.

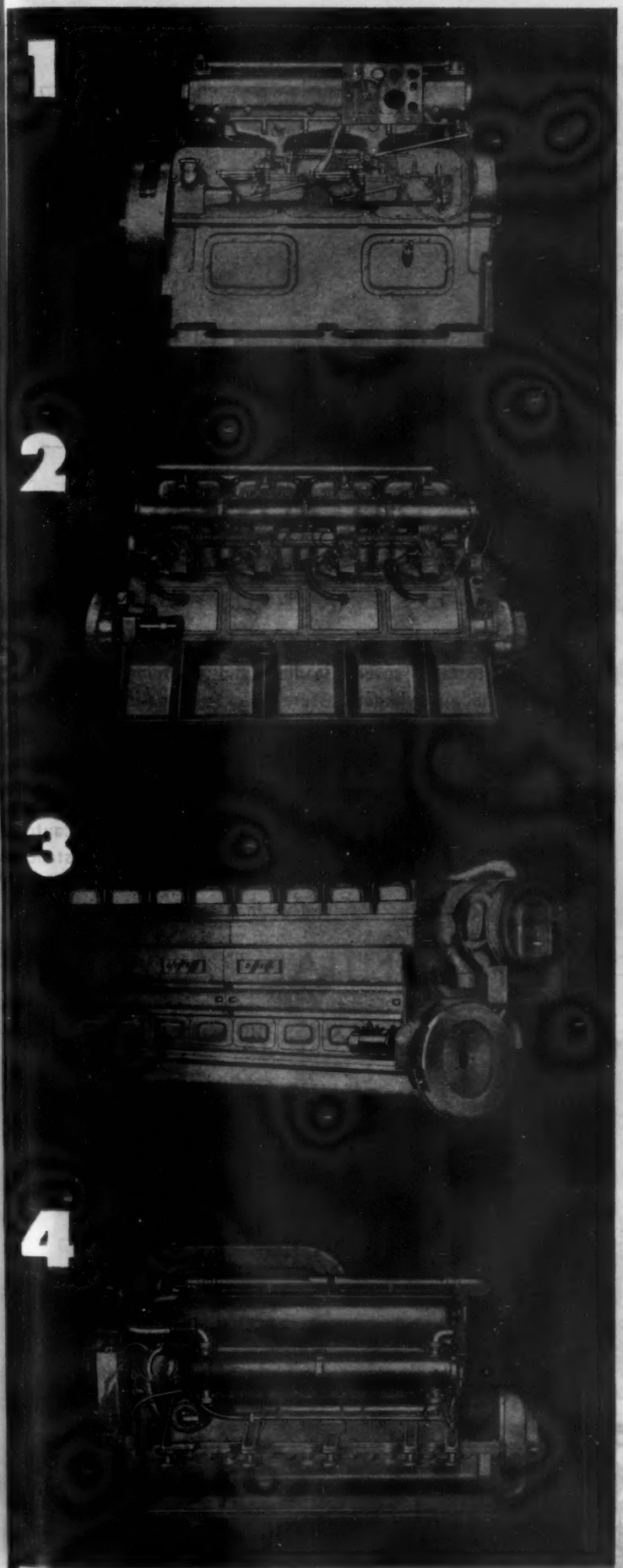
In cases where 100 cars daily are handled at a given point, S-A recording equipment can save you from $8,000 to $15,000 annually. Where only 15 cars a day are weighed the savings can be over $1,000 annually.

With S-A equipment your weighing can be done FAST . . . at the rate of 4 or 5 cars per minute. And the weights are automatically recorded, giving incontestable records.

Besides . . . there is no bottleneck at the scale. Cars roll out at a saving to you and at top speed for your shippers. A Streeter-Amet installation can speed your work now . . . with economy both today and in the future when it will be sorely needed. The services of an experienced field man goes with every Streeter-Amet installation. A free survey of your weighing methods is available for the asking.

STREETER-AMET COMPANY
4109 NORTH RAVENSWOOD AVENUE
CHICAGO 13, ILLINOIS

STREETER-AMET



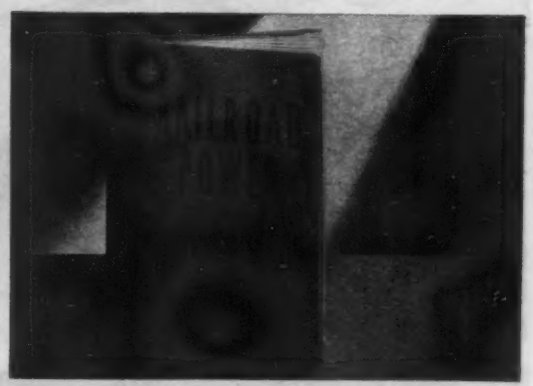
HERE'S STERLING'S ANSWER

to the railroad industry's power needs

STERLING engines are ready today to answer a wide range of power requirements in the railroad industry.

These new Sterling models—the culminated result of nearly a half a century's engineering experience in building fine engines—include power plants operated by gasoline, gas or diesel fuel—supercharged or unsupercharged—in a power range from 75 to 1800 horsepower.

Sterling Engines for many years have been looked up to as a most economical and dependable source of continuous duty or stand-by power. In the Sterling line are engines designed to power diesel locomotives; rail cars; engine driven generator sets; compressors; pumps; snow plows; cranes; bulldozers; and many other uses where long years of trouble-free service is essential.



THIS BOOKLET SENT ON REQUEST

Every operating executive in the railroad industry should have a copy of this new "Railroad Power" booklet which gives complete information regarding the entire line of Sterling Engines now available for early delivery and their applications in your industry. Write for it without obligation.

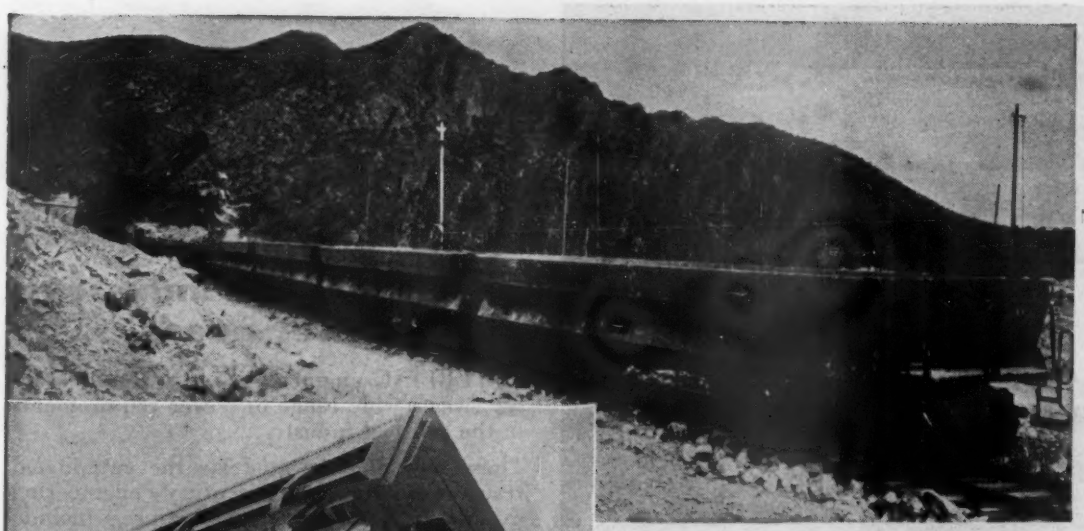
STERLING ENGINE COMPANY

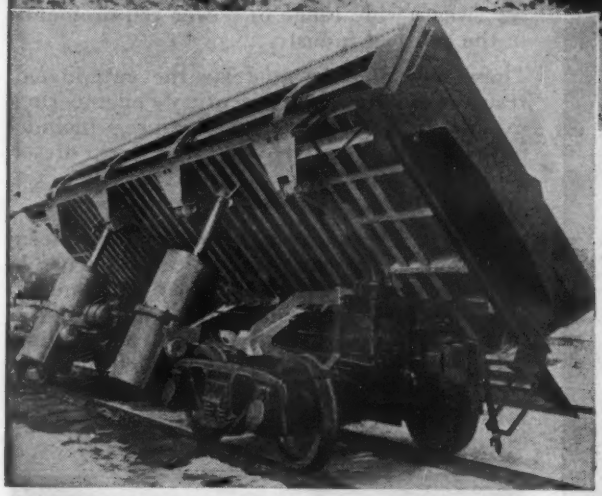
1277 NIAGARA STREET BUFFALO 13, NEW YORK

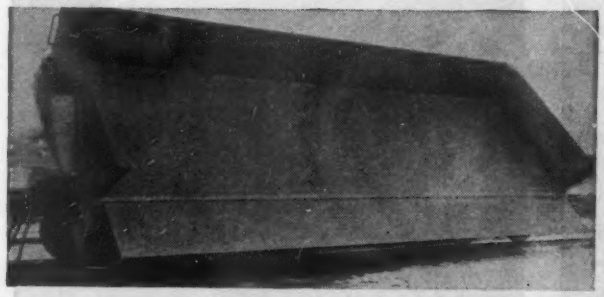
New York City, 900 Chrysler Bldg. • Washington, D. C., 806 Evans Bldg. • Chicago, Ill., 855 Board of Trade Bldg.

Distributors in principal cities

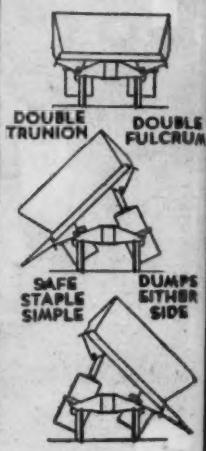
1—PETREL Gasoline Six Cylinder Engine. Power ranges: 75 to 250 horsepower. **2—VIKING** Gasoline Eight Cylinder Engine. Power ranges: 345 to 650 horsepower. **3—VIKING** Diesel Eight Cylinder Supercharged Engine. Power ranges: 220 to 650 horsepower. **4—ADMIRAL** Gasoline Twelve Cylinder Supercharged Engine. Power ranges: 450 to 1800 horsepower.











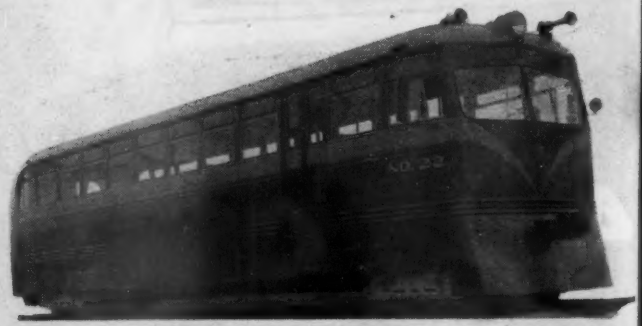
DIFFERENTIAL AIR DUMP CARS

(PATENTED)

DIFFERENTIAL AIR DUMP CARS are constructed to withstand severe loading and dumping conditions. Powerful air cylinders assure quick and positive dumping to either side. The double fulcrum principle as shown in the diagram supports the dump body on widely spaced fulcrums and there is no rocking or swaying in transit. Locking mechanism is eliminated and there is no chance for accidental dumping. Operation of side door is automatic and the load is deposited at an extreme distance from the track. The doors are held positively closed by the weight of the body and its load.

DIFFERENTIAL RAIL CARS

(PATENTED)
AXLESS TRUCKS



Differential Rail Cars are powered with four gasoline engines that deliver 500 HP to eight wheels. AXLESS Trucks permit independent rotation of wheels eliminating slippage and noise on curves.

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO, U. S. A.

Builders of Haulage Equipment Since 1915

AIR DUMP CARS · MINE CARS · MINE LOCOMOTIVES · ROCK LARRIES · DUMPING DEVICES
BURDEN-BEARING LOCOMOTIVES · STOCKPILING CARS · COMPLETE HAULAGE SYSTEMS

For

NO FOG • NO FILM • NO FROST

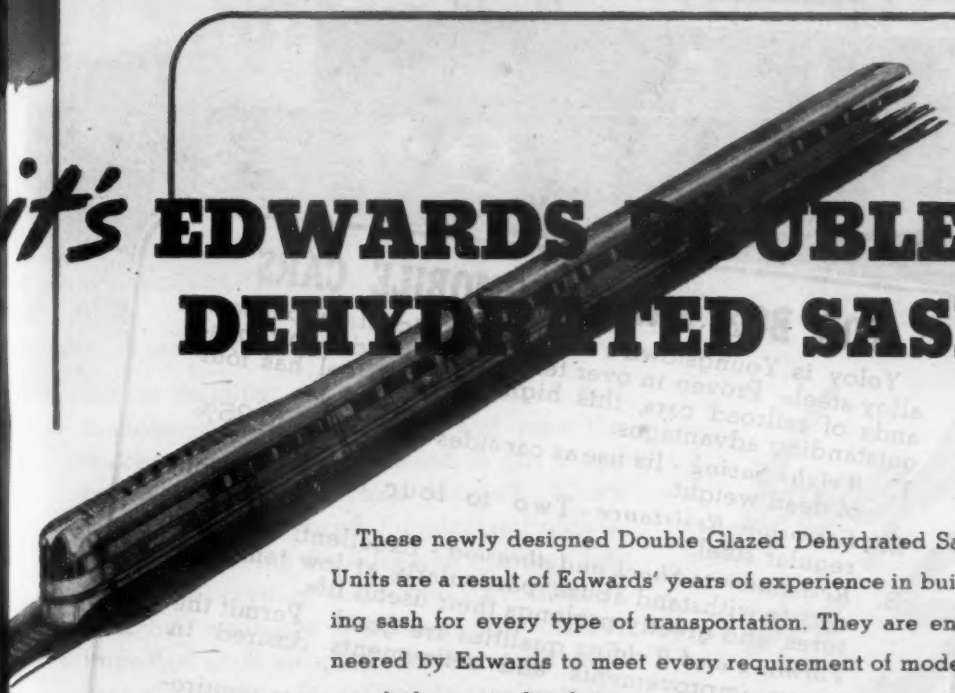
• • MODERN STREAMLINED DESIGN

• • LIGHTER WEIGHT *with* GREATER STRENGTH

• • EASIER QUICKER INSTALLATION

• • TOP AIR CONDITIONING EFFICIENCY

• INCREASED PASSENGER SATISFACTION



it's EDWARDS DOUBLE GLAZED DEHYDRATED SASH

These newly designed Double Glazed Dehydrated Sash Units are a result of Edwards' years of experience in building sash for every type of transportation. They are engineered by Edwards to meet every requirement of modern coach design and to bring to your passengers new standards of travel comfort and convenience.

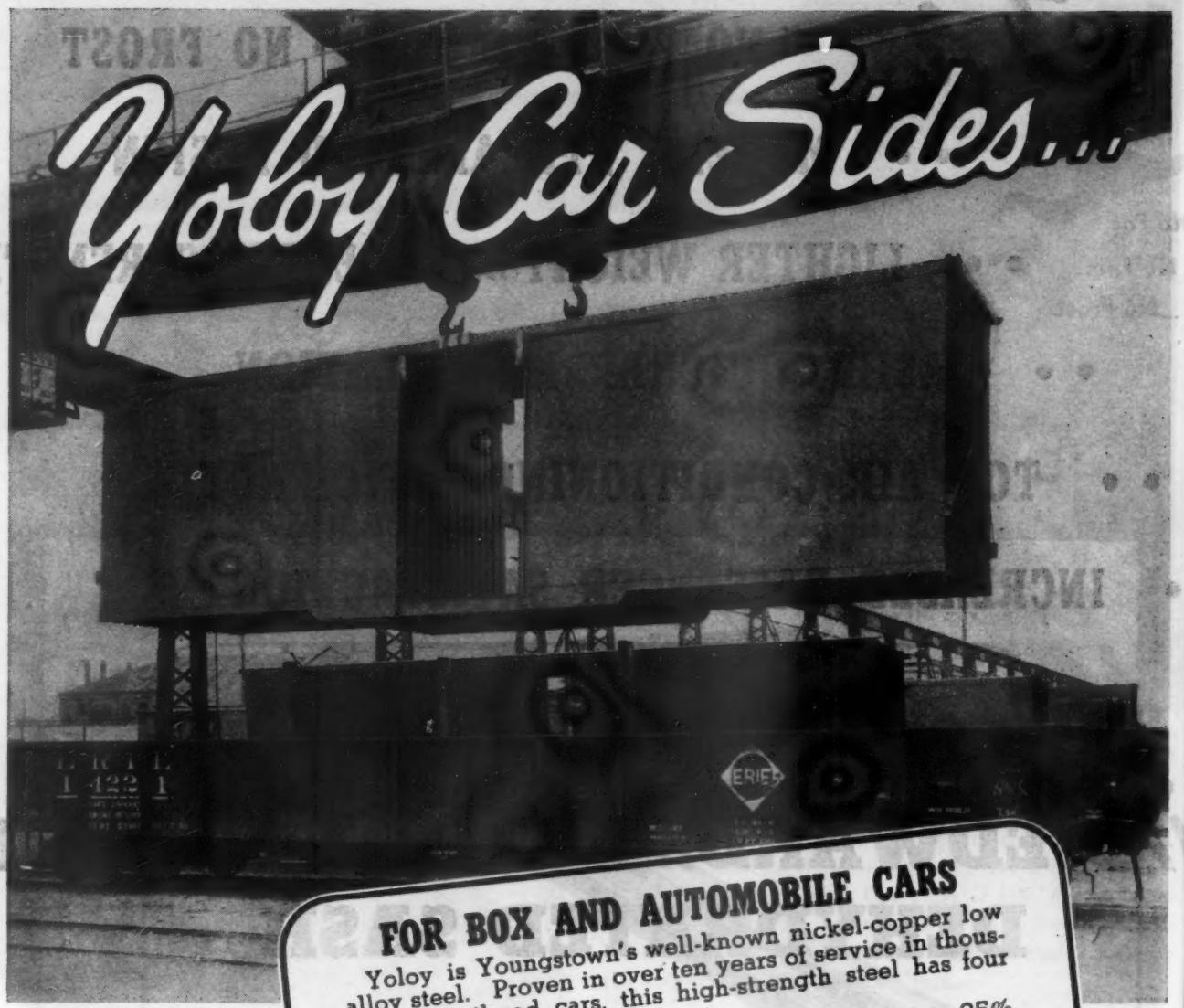
O. M. EDWARDS CO., INC. • SYRACUSE, N.Y.

EDWARDS SASH

THE EYES OF TRANSPORTATION



SASH FOR EVERY TYPE OF TRANSPORTATION—ON LAND, ON THE SEAS, IN THE AIR



One Class I railroad which recently took delivery of a large order of Yoloy car sides and doors reports a dead weight saving of 23% on automobile cars and 22% on box cars.

FOR BOX AND AUTOMOBILE CARS

Yoloy is Youngstown's well-known nickel-copper low alloy steel. Proven in over ten years of service in thousands of railroad cars, this high-strength steel has four outstanding advantages:

1. *Weight Saving* - Its use as car sides saves 20% to 25% of dead weight.
2. *Corrosion Resistance* - Two to four times that of regular steel.
3. *Resistance to Shock and Abrasion* - Excellent. Enables cars to withstand abuse, particularly at low temperatures, and greatly prolongs their useful life.
4. *Forming and Welding* qualities are good. Permit the many improvements and refinements desired in modern car construction.

We are ready to talk to you NOW about your requirements, both immediate and future. Yoloy car sides and Yoloy doors can be secured from The Youngstown Steel Door Company, Youngstown, Ohio. Yoloy is also available for other construction needs.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN 1, OHIO

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

YOLOY YOUNGSTOWN STEEL

Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Coke Tin Plate - Electrolytic Tin Plate - Rods - Wire - Nails - Tie Plates and Spikes.



In car-building, the very function of steel castings—to carry the loads and take the shocks and impacts—is bound to put a premium on soundness and strength. That's where PSF's advanced foundry techniques, modern finishing facilities and constant laboratory supervision come into play. They're your best assurance of freedom from defects, improved grain structure, accuracy and stamina—the qualities in castings that spell *service*.

keep cars in Service



WAD 9366

47 YEARS OF STEEL CASTING KNOWLEDGE

Pittsburgh STEEL FOUNDRY CORPORATION

GLASSPORT, PA.

Sales Offices: NEW YORK • PHILADELPHIA • WASHINGTON AND CHICAGO



Magnus Satco-faced
Locomotive Driving Box

Satin finish

SATCO BEARING METAL

"SAVES FACE"



Magnus Satco-lined Journal Bearing
for Passenger and Freight Cars

• The satin smoothness of Satco Metal "Saves Face" on lateral facings of driving boxes by reducing friction to the absolute minimum . . . thus reducing wear and prolonging bearing life.

SATCO Bearing Metal

MODERN
HEAVY DUTY
BEARINGS

MAGNUS METAL CORPORATION
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548

"Railway" Springs

...FOR SMOOTH RIDING FREIGHT



Closer attention to the design and quality of truck springs is certain to reduce damage to lading and to result in lower freight car maintenance. The "Railway" organization will provide exactly the right spring for the service. "Railway" Springs embody the essential characteristics of strength, uniformity, stamina and resiliency that only a highly specialized organization like "Railway" can develop.



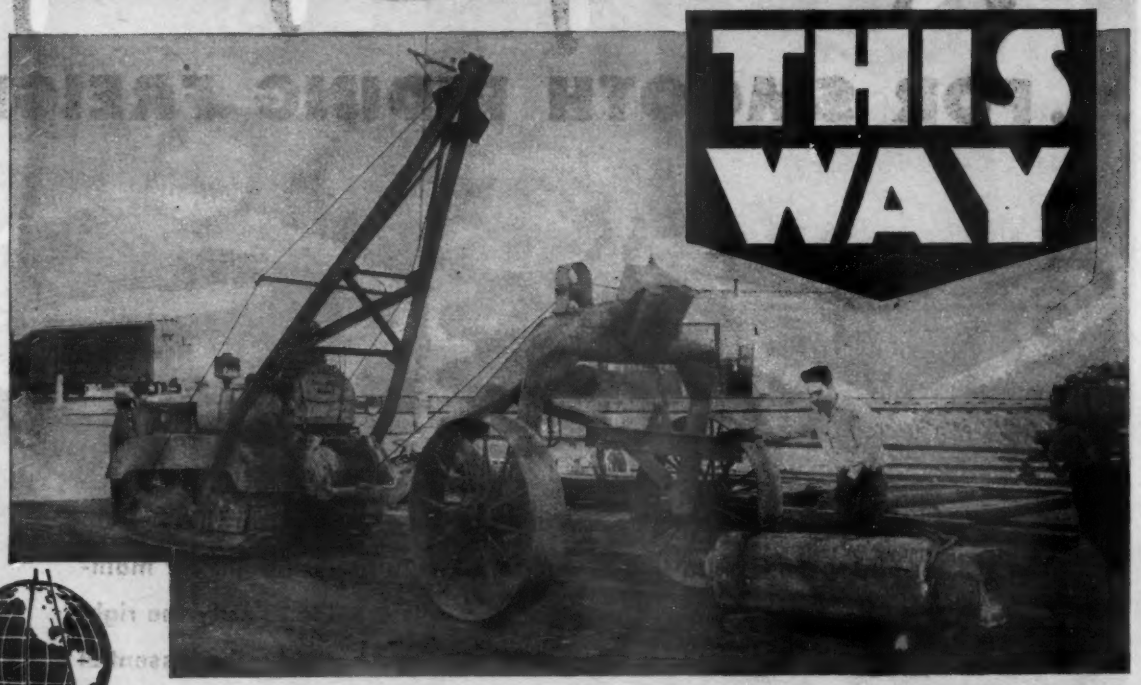
Alco

AMERICAN LOCOMOTIVE COMPANY

RAILWAY STEEL-SPRING DIVISION

30 CHURCH STREET NEW YORK 7, N. Y.

Timken solved a MOVING-STORAGE PROBLEM



Using a "Caterpillar" D4 tractor, equipped with HYSTER Towing Winch and drawing a HYSTER Sulky, the movement of steel to the forge shop, and from the shop to outside yard storage, was satisfactorily solved at the Canton, Ohio plant of Timken Roller Bearing Company. BY THIS MEANS, THIS COMPANY SAVED THE EXPENSE OF PROVIDING ANOTHER BUILDING WITH AN OVERHEAD CRANE.

Beside being ready and available for other towing jobs, or for hoisting services, this HYSTER equipment is more than paying for itself on the above-mentioned job. Mobile equipment, heavily-loaded trucks and the like, will never stay bogged down in the mud with a HYSTER winch and "Caterpillar" tractor on the premises.

Perhaps you, too, have a knotty problem in plant and yard transportation — the HOISTING OF MATERIALS, THE SPOTTING OF HEAVY EQUIPMENT. Perhaps some of these methods, and some of this equipment, will suggest a solution. We'll gladly work with you to that end. Or, consult your "Caterpillar" dealer.

445-40

HYSTER
FOR ANY LIFT OR PULL

— BRANCH OFFICES —

221 N. LaSalle St., Chicago 1, Ill.; 90 West St., New York 6, N. Y.; 1022 Denrike Bldg., Washington 5, D. C.; 233 Ninth Street, San Francisco 3, Calif.; Masonic Building, New Orleans 12, La.; 2219 Fourth Ave., Seattle 1, Wash.; 2700 Santa Fe Avenue, Los Angeles 11, Calif.; 215 Euclid Ave., Cleveland 14, Ohio; 211 Farnsworth Bldg., Memphis 3, Tenn.

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WORLD'S LARGEST MANUFACTURER OF TRACTOR HOISTS AND WINCHES

Report No.

May 19, 1945

OBLEM

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HYSTER Towing
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North Adams Street
PEORIA 1, ILLINOIS
ISTS AND WINCHES

Report **No. 11** on the latest advance in railroad communications



V.H.F. RADIO speeds operations at Jacksonville terminal

One of the heaviest switching passenger terminals in the nation handling tremendous volumes of baggage, express and mail shipments now demonstrates the benefits of Bendix V.H.F. (Very High Frequency) Railroad Radio. Instant vocal contacts between the train directors, yardmasters and the switch engine crews simplify the problem of making up passenger trains to handle swollen wartime traffic between Florida and the rest of the country, and speed up the handling of the largest volume of fruit express ever to clear through a single terminal.

The unusual character of the operations at this terminal is testimony of the flexibility of Bendix V.H.F. railroad radio. Independent control areas require the use of two separate frequencies, but as the two areas must be able to talk to each other from time to time, and as the switch engines pass frequently from one area to the other, each unit must be capable of operation on either of the two frequencies at any time. Push buttons similar to those on a home or automobile receiver are used to select the desired channel.

For constant telephone communication between the ground and operating crews, in the Rocky Mountains and across deserts, in Great Lakes car ferries and in congested terminal areas, Bendix V.H.F. has proved that it is the ideal system for reliability and flexibility.

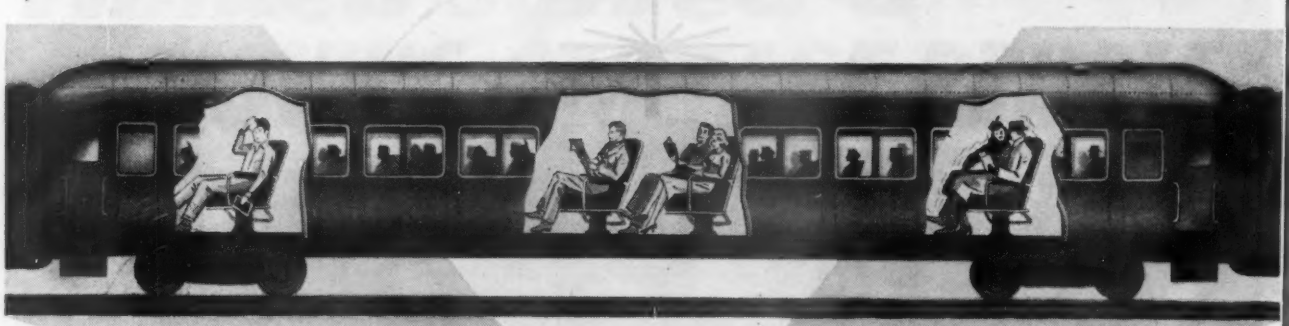
For further information on the wide variety of applications to be found for V.H.F. railroad radio, write direct to Bendix.

Bendix **RADIO DIVISION**

BALTIMORE 4, MARYLAND

PRODUCT OF BENDIX (BENDIX RADIO) AVIATION CORPORATION

PASSENGERS WILL BE MORE DISCRIMINATING!



HOT ZONE

MODERATE ZONE

COLD ZONE

G-B MFG. CO.

ESTABLISHED 1898

Fiberglas*

*Trademark Reg. U. S. Pat. Office by Owens-Corning Fiberglas Corp.

Keeps Them In The Comfort Zone



Here are a few of the different forms of Fiberglas Insulation for railroad equipment.

Fiberglas Passenger Car Insulation has been tested, approved and used extensively by every major railroad and car builder . . . on practically all de luxe "name trains."

Summer or winter, railroad passengers of tomorrow will demand Comfort. Whether they ride in club car, bedroom, or coach, they will expect to enjoy "the moderate zone" the year around.

Fiberglas, the insulating material of tomorrow, here today, efficiently *seals in* the manufactured comfort of air-conditioning and heating equipment and *seals out* uncomfortable weather. And it is fireproof, light weight, reduces noise. To gain these benefits, specify Fiberglas in your designs—be sure of permanent, efficient insulation year after year.

Now available to railroads and car builders. Complete information on extraordinary new developments in Fiberglas insulations sent at your request.

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RAILWAY INSULATIONS MADE OF FIBERGLAS*



GREAT STRENGTH—HIGH DUCTILITY

These Two Important Properties Are Joined in One Great Steel

There are many steels that offer high yield strength; there are others that provide good ductility. It is the combination of both desirable properties in N-A-X High-Tensile Steel that makes possible exceptional economies in the design and fabrication of stressed parts. N-A-X High-Tensile Steel is proving its worth in varied war equipment and in essential civilian products . . . bringing to manufacturers the advantages of easy cold-forming, excellent weldability, great strength, and high resistance to impact, wear and fatigue. It is one of America's most *useful* steels.

N-A-X ALLOY DIVISION

GREAT LAKES STEEL

Corporation

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UNIT OF NATIONAL STEEL CORPORATION

GREAT STEEL FROM GREAT LAKES

N-A-X 9100 SERIES STEELS for shallow or medium hardening requirements, and N-A-X X-9100 Series Steels (molybdenum-bearing) for depth hardening requirements, provide an all-purpose analysis to yield properties in both carburizing and constructional ranges of carbon.

N-A-X ARMORPLATE, used in practically every type of landing craft and in scores of combat vehicles, gives evidence of the strength and ruggedness that characterize N-A-X low-alloy steels.

THE BATTERY PICKED BY ENGINEERS

KATHANODE GLASSKLAD since 1925

DURAPOR (RUBBER) SEPARATOR

The most successful, durable and long-lived electrolyte.

PERFORATED RUBBER ENVELOPE

Holds the plate [illegible] in place completing a Unit Assembly.

SPUN GLASS MAT

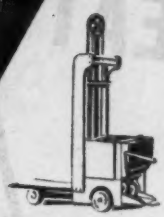
Exclusive Gould absorbent layer designed for retaining active material.

KATHANODE POSITIVE GRID

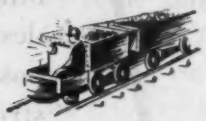
Long-lived, high [illegible] conductivity with [illegible] power.





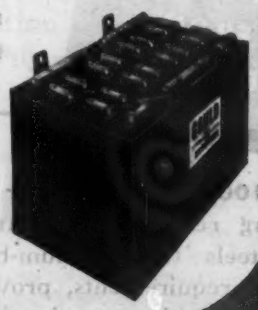






The Gould Kathanode is not a new battery. Its basic principle of spun glass protection was first introduced in America by Gould twenty years ago, and it continues to be the outstanding battery of its type.

Behind today's Gould Kathanode are two decades of constant research and improvement . . . two decades of actual operation in field service . . . two decades of unqualified success.



Write Dept. 55 for Catalog 100 on Kathanode. Glassklad Batteries for Industrial Trucks and Tractors.

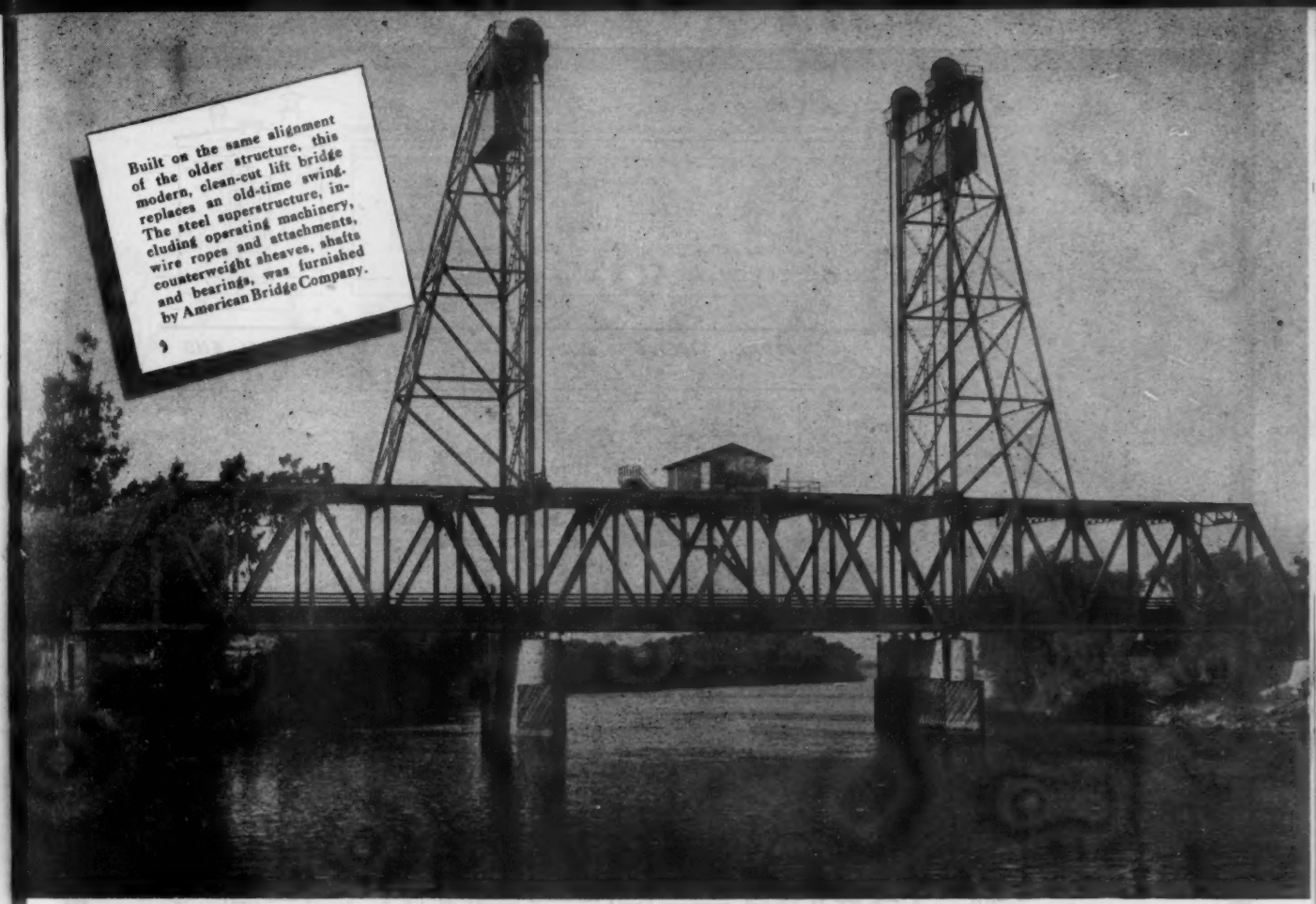
ARMY E ★★ NAVY

FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

GOULD

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.

Factories: Adams • Chicago • Dallas • Depew • Jeffersonville • Los Angeles • North Bergen • Rock Island • St. Paul • Sioux City • Zanesville



BRIDGES FOR TOMORROW

ELIMINATION of transportation bottlenecks on strategic railroads is exemplified by this modern, double-track lift bridge which replaces an old-time swing.

The "old-timer," built 50 years ago, rendered yeoman service in the years of lighter roadbed loadings and slower train speeds. Within its limited capabilities it performed faithfully, even within the early period of the war emergency. But its light construction, its slow-operating swing span, and its single-track in an otherwise double-tracked system handicapped train movements with slow speed restrictions.

The new, double-track structure, with a fast operating lift span, eliminates slow-speed orders and reduces navigation interruptions to a minimum. Engineered to the requirements of today's heavy power, traffic density and high speed operations, it embodies design and construction elements that contribute to great permanence, low maintenance costs and sound operating economies.

Modern bridge structures such as this point the way to the coming job of roadbed rehabilitation because postwar competition will demand a continuance of the outstanding service rendered by America's railroads during the war.

When peace comes, American Bridge, too, will be able to put aside its war job. Then, with vastly greater facilities, resources and experience, we will be fully prepared to meet every structural need of the nation's railroads.

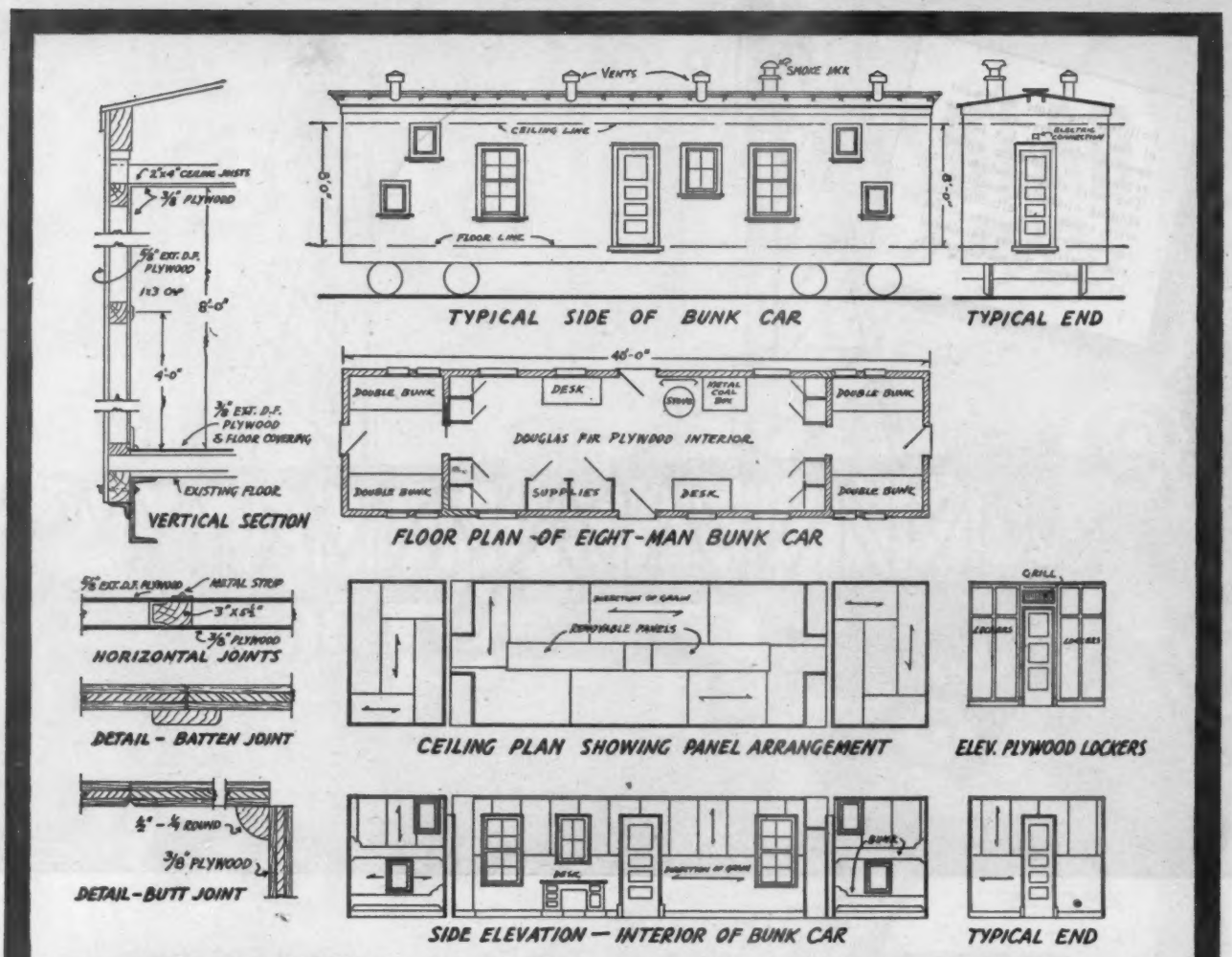
AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

District Offices in: Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* United States Steel Export Company, New York

UNITED STATES STEEL



BUNK CAR REBUILT WITH PLYWOOD

These plans show how a standard 40-foot box car can be rebuilt to provide a bunk car for eight men. This is one unit of a three-car camp train planned especially to utilize the unique advantages of plywood construction. Three standard box cars are easily rebuilt into such a camp-car unit—comprised of bunk car, a diner with full kitchen facilities, and a foreman-shop car. Cars rebuilt with plywood are strong, rigid, durable, easy to heat and free of drafts. The large plywood panels go up quickly, reduce seams and cracks, provide a smooth, easy-to-clean surface. Douglas Fir Plywood Association engineers will be glad to work with you in developing such a unit. Write or wire today.



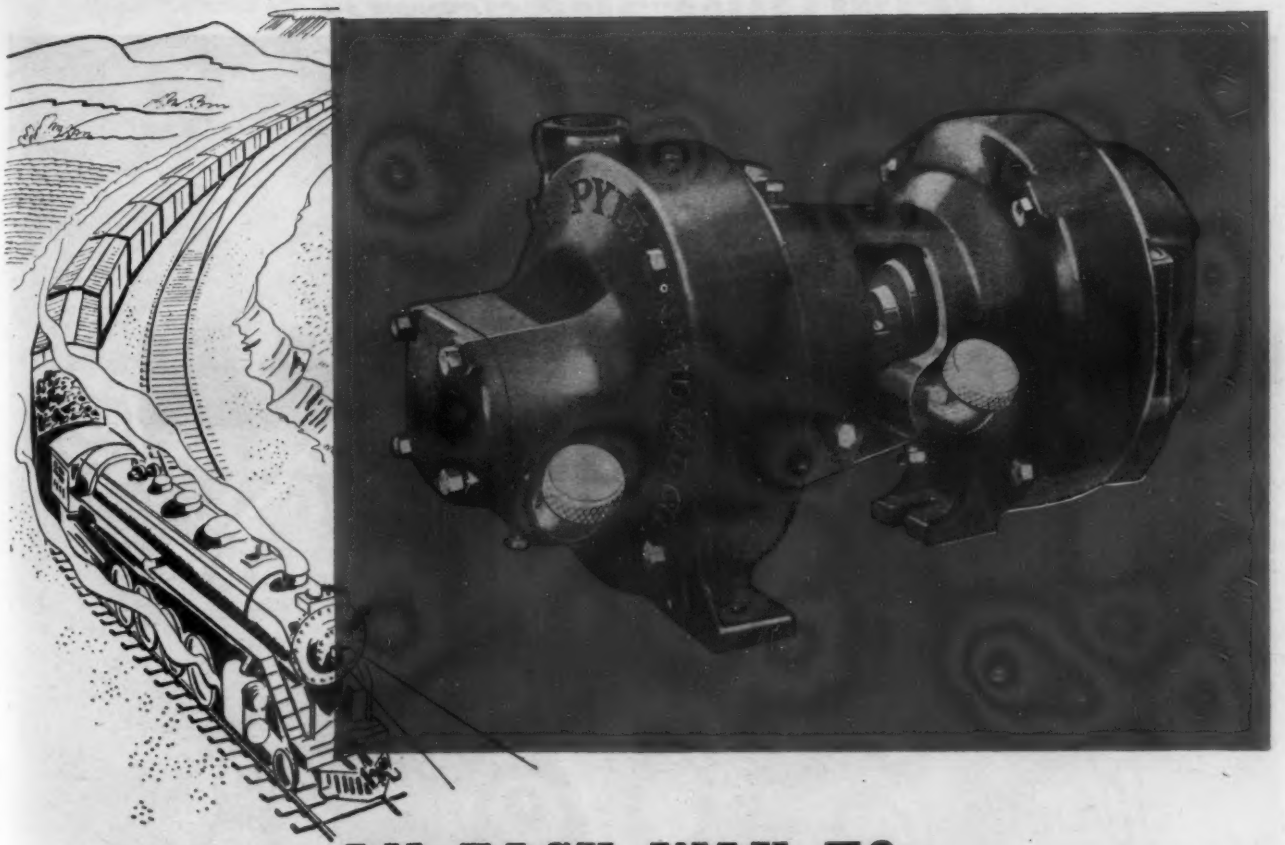
Douglas fir plywood is now available only on highest priorities. Application for allocation must be made by suppliers to the War Production Board.

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Washington

PLYPANEL D.F.P.A. TRADE MARK REG. U. S. PAT. OFF.
GENUINE PLYSCORD SHEATHING D.F.P.A. INSPECTED
GENUINE PLYWALL Douglas Fir Plywood WALLBOARD D.F.P.A. INSPECTED
GENUINE DOUGLAS FIR PLYFORM Concrete Form Panel D.F.P.A. INSPECTED
EXT.-D.F.P.A. TRADE MARK REG. U. S. PAT. OFF.

DOUGLAS FIR PLYWOOD
LARGE. LIGHT. STRONG.
Real Wood PANELS

SPECIFY DOUGLAS FIR PLYWOOD BY THESE "GRADE TRADE-MARKS"



AN EASY WAY TO IMPROVE LOCOMOTIVE LIGHTING

The greater reliability and more uniform electrical performance of the Type K-240 headlighting turbo-generator are features of great importance in meeting the demands of present-day operating conditions. The Type K-240 runs longer between inspections, requires less maintenance, and uses less oil. It furnishes dependable power for all the requirements of modern locomotive lighting, and stands up to continuous duty with the minimum of attention. Existing Type K-2 equipments can be readily converted to the modern Type K-240 by application of improved interchangeable parts.

Pyle-National turbo-generators are available in a full range of types, capacities 500 watts to 12,000 watts, for all classes of service. Pyle-National headlight cases, cab lighting fixtures, and wiring equipment allow you to choose from a complete line, adapted to the needs of any type of modern motive power.

THE PYLE-NATIONAL COMPANY
1334-58 North Kostner Avenue • Chicago, Illinois

Offices: New York, Baltimore, Pittsburgh, St. Louis, St. Paul, San Francisco

Export Department: International Railway Supply Co., New York
Canadian Agents: The Holden Co., Ltd., Montreal



Type C-14605
Streamline Case

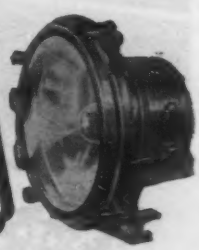


Type MO-6
Turbo-generator



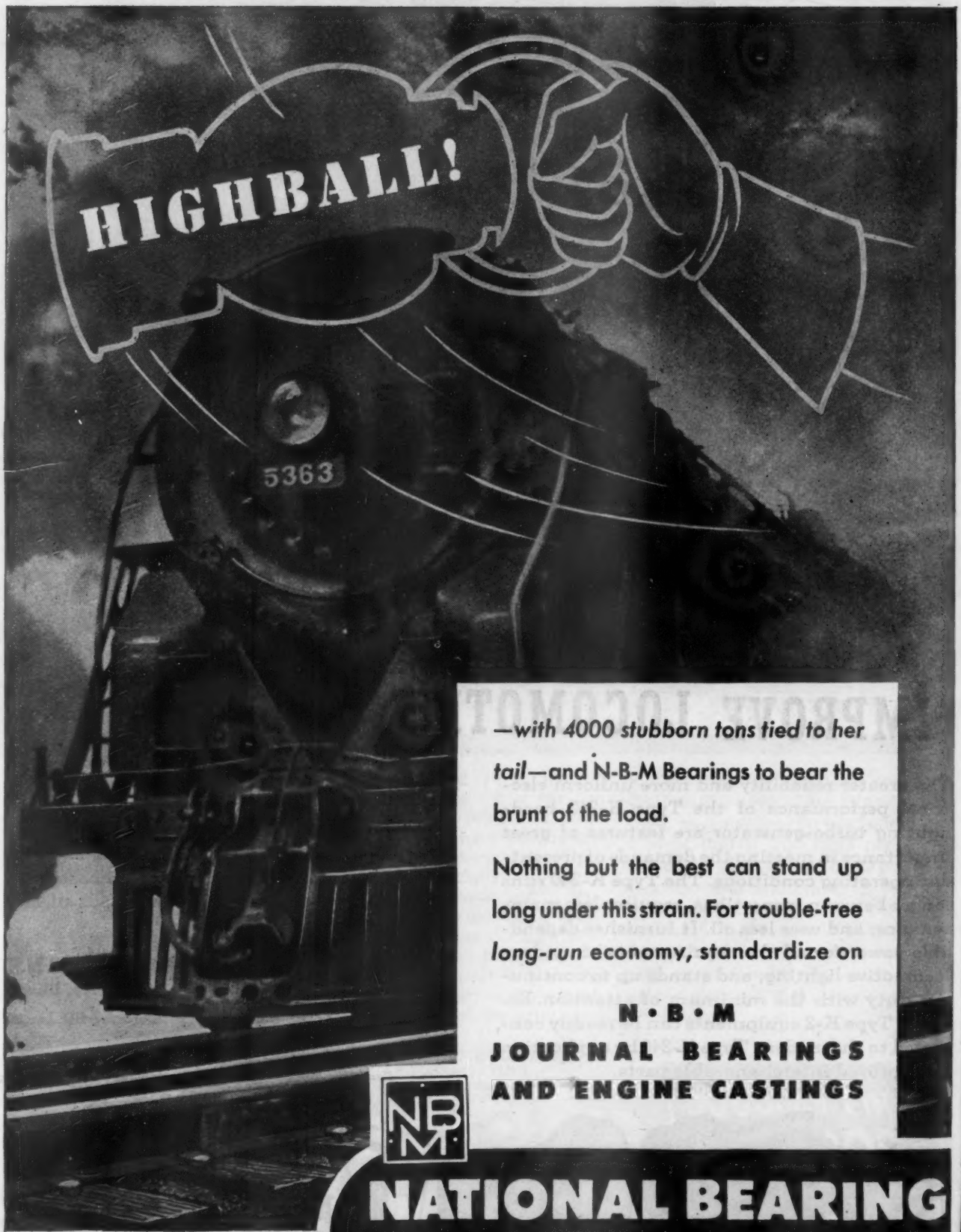
Type C-155
Cast Headlight Case

PYLE-NATIONAL
RAILWAY
ELECTRICAL EQUIPMENT
• SINCE 1897 •



Type 14065
Switch Engine Case

HEADLIGHTS • TURBO-GENERATORS • CONDUIT FITTINGS • FLOODLIGHTS • MULTI-VENT



—with 4000 stubborn tons tied to her tail—and N-B-M Bearings to bear the brunt of the load.

Nothing but the best can stand up long under this strain. For trouble-free *long-run* economy, standardize on

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ST. LOUIS • NEW YORK

AMERICAN Brake Shoe COMPANY

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

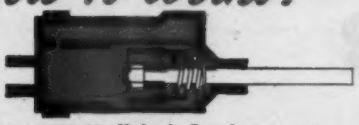
PETTIBONE MULLIKEN

HYDRAULIC RETARDER

For Spring Frogs!



How It Works!



1 SPRING WING RAIL CLOSED, Hydraulic Retarder in normal position.



2 SPRING WING RAIL OPENS QUICKLY as wheel enters frog. Oil pressure behind moving piston opens valve, compressing valve spring. Oil flows rapidly to opposite side of piston through large openings.



3 SPRING WING RAIL CLOSES SLOWLY. Wheel has just left frog —spring has closed valve—oil is buffing return of piston. Oil flowing slowly through tiny slow return port permits piston return to within ¾" of normal in about 12 seconds.



4 SPRING WING RAIL CLOSING TERMINATES WITH A FINAL FAST RETURN to normally closed position. Piston has moved within ¾" of normal position—oil rushes through fast return by-passes permitting final split second slap against rail for sure positive closing.

SAVES WHEEL FLANGES
REDUCES BALLAST MAINTENANCE
INCREASES LIFE OF SPRING FROGS

Operates in a Straight Line • Only One Type and Size for All Rail Sections • No Need for Right or Left Hand Variations Rugged and Simple with No Small Complicated Parts • Easy to Dismantle, Clean or Repair • Easy to Maintain.

The Pettibone Mulliken Hydraulic Retarder for Spring Frogs was specifically designed to retard and cushion the slapping of the Spring Wing Rail between wheels of cars.

The required spring strength of the frog is so great that each time it functions it delivers a beating to the component parts of its own structure, loosening bolts and accelerating wear. Without retardation of the spring, each wheel must compress the strong spring. The initial blow to the wheel flange is substantial and occasionally damages, cracks, or breaks the wheel flange, permitting subsequent wheel failure.

When the PMCO Hydraulic Retarder is installed, the first wheel opens the wing rail; buffing of spring action begins, relieving the frog and the following wheel flanges of further repeated impact. When the last wheel of the train has moved through the frog, the Retarder permits return to normal position in about 12 seconds softening the blow to the frog structure.

Price **$40.00** *complete.* **F.O.B. CHICAGO, ILL.**

"Quality Since 1880"

PETTIBONE MULLIKEN CORPORATION

4710 West Division Street, Chicago 51, Illinois



QUIET WORKER

With the increased use of Diesel power in locomotives, both switching and main line, the problem of adequate silencing becomes a major consideration.

The conventional Maxim silencers have been used in this field for some time, with the additional protection of spark arresting where operation is in a fire hazard area such as the case of refineries, or ordnance plants. A more recent development, however, the Maxim exhaust manifold silencer, brings the added advantage of substantial saving in space. *These silencers replace the conventional exhaust manifold and at the same time act as silencers of Diesel exhaust noise.*

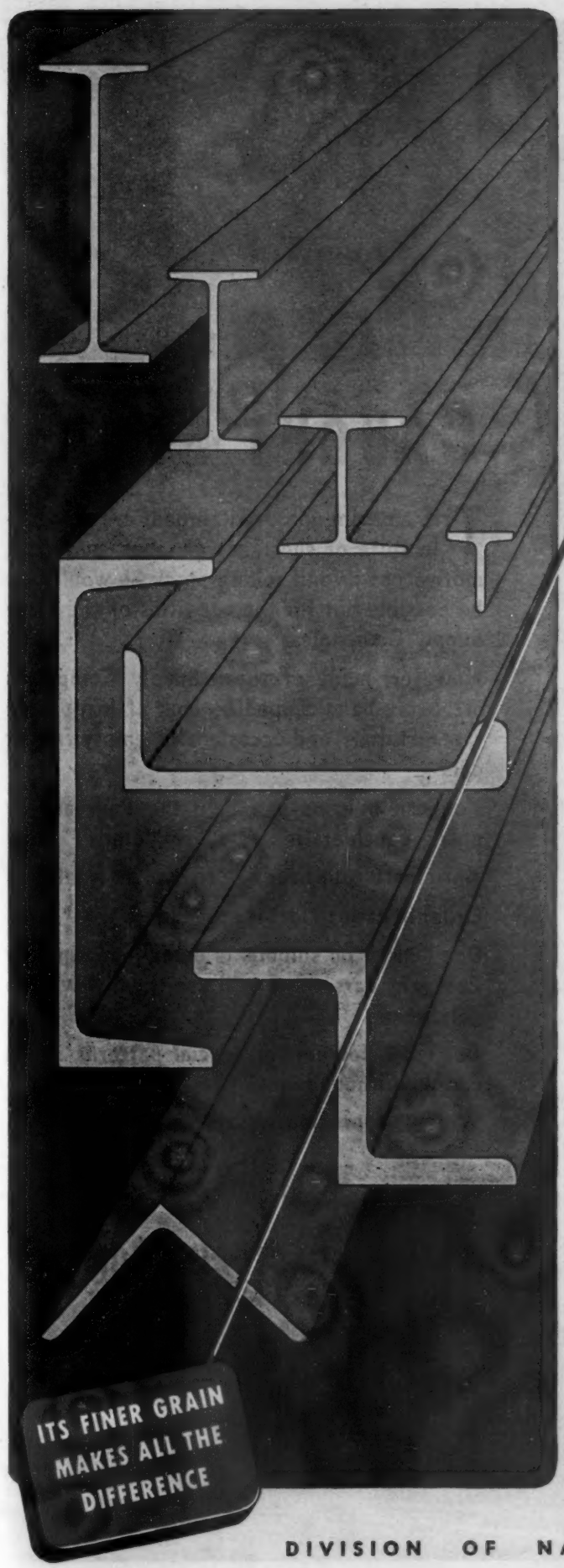
Maxim also makes Heat Recovery Silencers, which combine effective silencing with the production of hot water or steam for heating purposes. Wide interest has been shown in this practical method of utilizing exhaust heat, normally wasted, to produce usable steam or hot water. Our engineering Department will be glad to work with you on possible applications to the railroad field. Heat Recovery Silencer Bulletin WH-101 will be sent to you on request.

ARMY E NAVY

MAXIM



THE MAXIM SILENCER CO. • 64 HOMESTEAD AVE., HARTFORD, CONN.



N-A-X
HIGH-TENSILE STEEL

NOW . . .
STANDARD STRUCTURALS AND SPECIAL SECTIONS FROM WEIRTON IN N-A-X HIGH-TENSILE STEEL

Great strength combined with excellent weldability; high resistance to impact, fatigue and corrosion; freedom from air hardening and copper precipitation — these proven characteristics of N-A-X High-Tensile Steel are now available in structural shapes from Weirton.

N-A-X High-Tensile Steel is particularly advantageous where applications involve stress, strain and payloads. Our metallurgists will be glad to work with you in applying the advantages of this great steel.

WEIRTON STEEL CO.

WEIRTON, WEST VIRGINIA

SALES OFFICES IN PRINCIPAL CITIES

DIVISION OF NATIONAL STEEL CORPORATION

G.R.Co.

ARCH BRICK

a Vital Factor



CAUGHT SHORT

THE amazing job our Railroads are doing — in spite of shortages of labor, materials, motive power and rolling stock — would not be possible but for the activities of the many Supply Companies.

However, many of these Supply Companies are being handicapped by lack of manpower, raw materials, and occasionally, empty freight cars.

You can help us and help the Railroads by giving consideration to a few details.

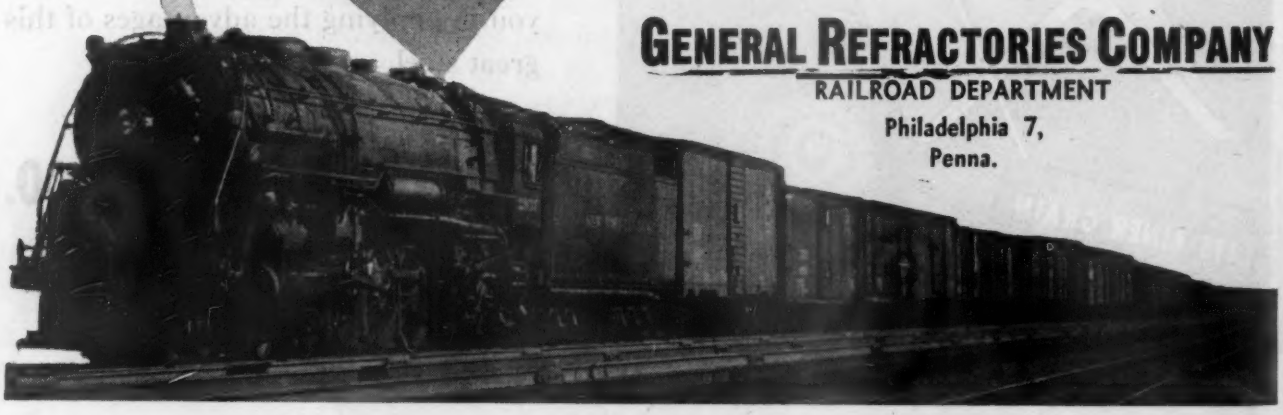
Anticipate your needs by five or six weeks.

Order in carload lots if possible.

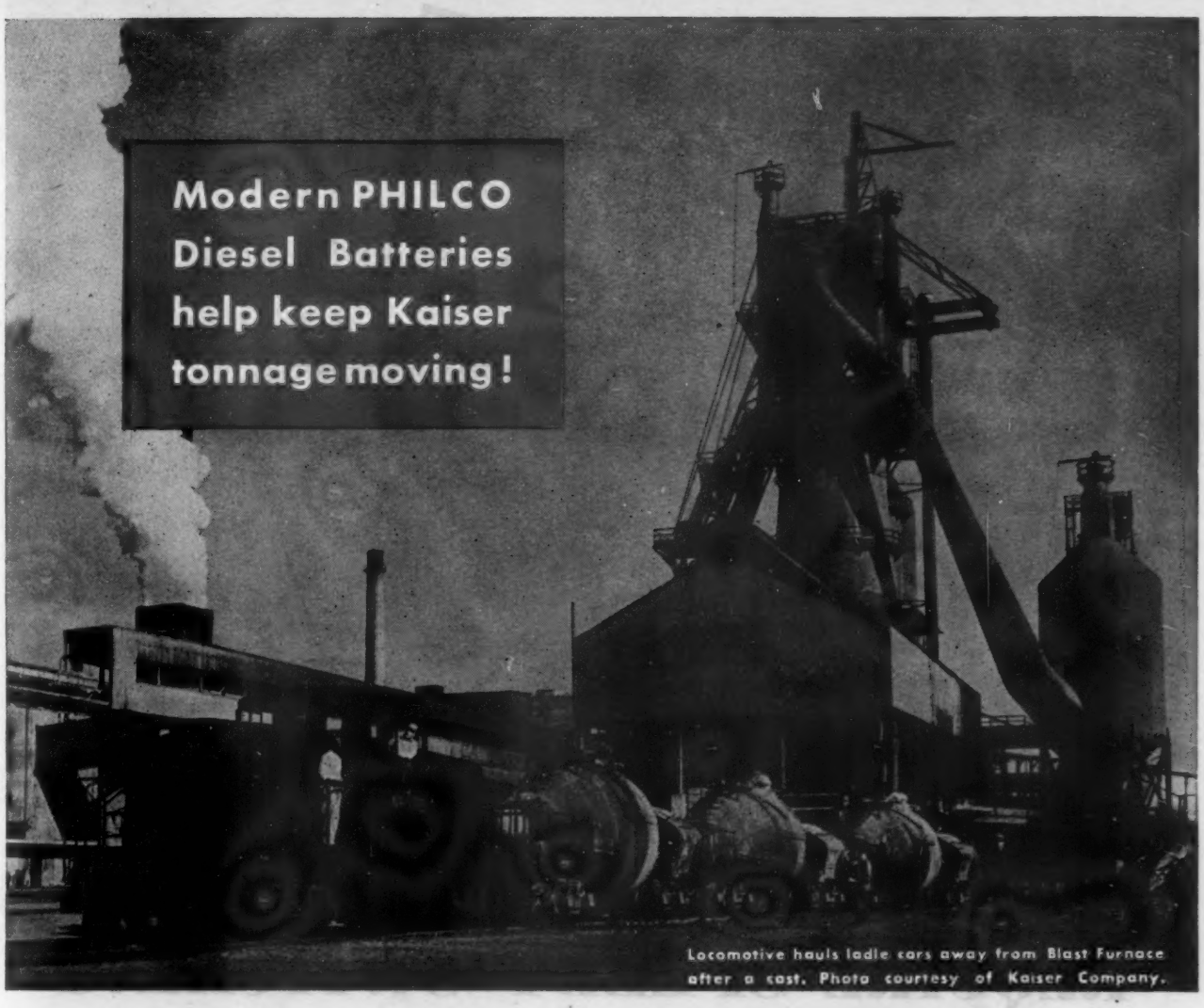
Don't insist on shipments being made in your Company cars — we will use them if we can get them.

Don't ask for new or special patterns if you can do without them.

We will appreciate your cooperation.



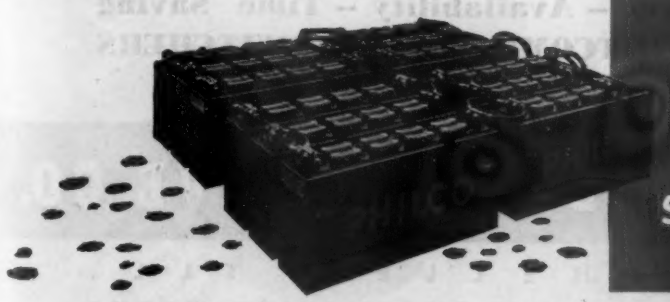
GENERAL REFRACTORIES COMPANY
RAILROAD DEPARTMENT
Philadelphia 7,
Penna.



Locomotive hauls ladle cars away from Blast Furnace after a cast. Photo courtesy of Kaiser Company.

AT KAISER STEEL WORKS, Fontana, California, Philco diesel starting batteries provide dependable starting power for a fleet of 80-Ton G.E. diesel electric switching locomotives. The great advantage of a Philco in such service is its thorough dependability—its extra wallop that always starts a diesel engine immediately. Important, too, are the extra quality features in a Philco, which have widely demonstrated their longer life and lower cost. New Philco Battery catalogs for all services are now available. Write today. PHILCO CORPORATION, Storage Battery Division, Trenton 7, New Jersey. *Makers of the famous Philco "Thirty".*

Typical 56-cell Philco Diesel Starting Battery



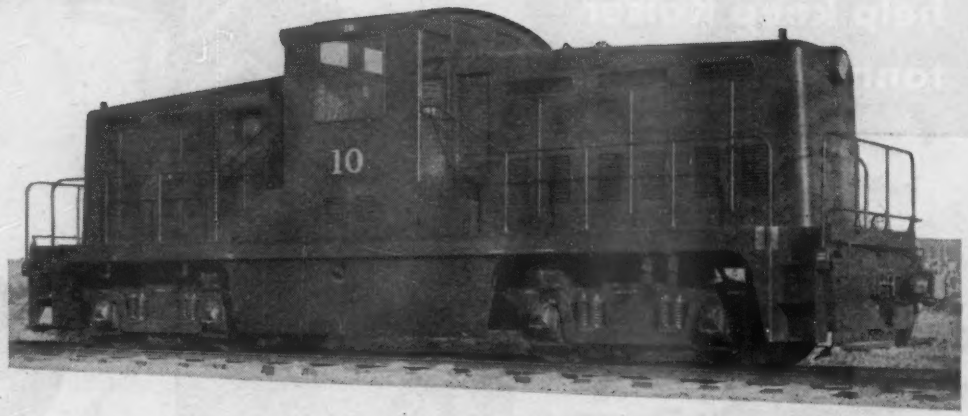
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PHILCO

STORAGE BATTERIES

FOR 50 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

FAST SCHEDULES



REQUIRE *SPEEDY* SWITCHING

To keep war freight on the go, switching, branch line and yard services must match increased train speeds to help save that valuable factor — TIME, and power-packed Whitcomb Diesel Switchers are doing just that for the nation's railroads. High availability and plenty of power have been responsible for the excellent, economical performance records being chalked up daily by sturdy Whitcomb Locomotives.

For Power – Availability – Time Saving order WHITCOMB DIESEL SWITCHERS

BLW THE BALDWIN GROUP

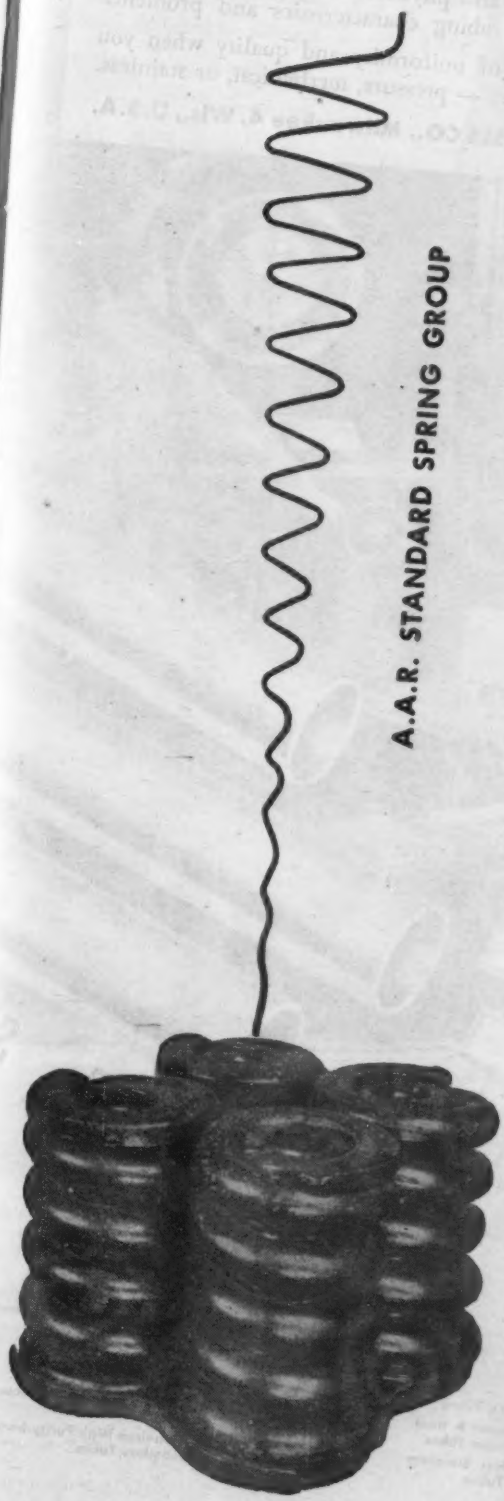
THE WHITCOMB LOCOMOTIVE CO.

ROCHELLE, ILL.

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS

HOLLAND SNUBBER SPRINGS
Swallow up the Shocks

Vibration and Recoil Curves





Style A-6-A Holland *Volute* Snubber Springs

1106

HOLLAND COMPANY

332 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

You can be Sure of Uniformity and Quality when you Specify Globe !

Extra care in production control assures uniformity and quality in all classes of Globe steel tubes. Unvarying quality is safeguarded and production methods and materials exactly controlled by one of the largest and complete chemical and physical laboratories of its kind, concentrating on tubing characteristics and problems.

You can be sure of uniformity and quality when you specify Globe tubes — pressure, mechanical, or stainless.

GLOBE STEEL TUBES CO., Milwaukee 4, Wis., U.S.A.



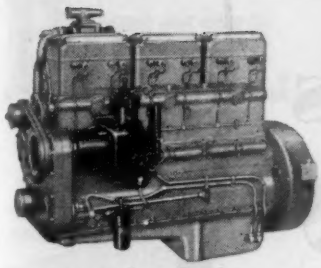
GLOBE STEEL TUBES

3019

- ★ Pressure Tubes
- ★ Condenser & Heat Exchanger Tubes
- ★ Seamless Stainless Steel Tubes

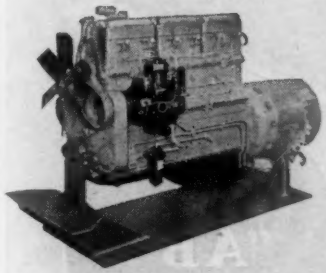
GLOBE TUBES

- ★ Mechanical Tubing
- ★ Gloweld Welded Stainless Steel Tubes
- ★ Globeiron High Purity Iron Seamless Tubes



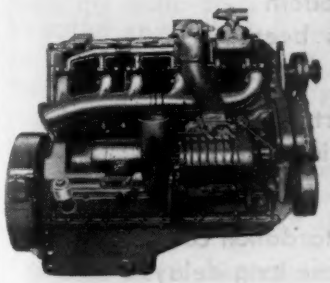
Model HBI-600 Cummins Diesel, designed for railroad service, is a six-cylinder, 4⅞" x 6", 672 cu. in. engine which develops its maximum 150 hp. at 1800 rpm.

☆ ☆ ☆



Incorporating the same basic engine as the model described above, this unit (rated 150 hp. at 1800 rpm.) has been specially designed for one of the country's leading builders of locomotives.

☆ ☆ ☆

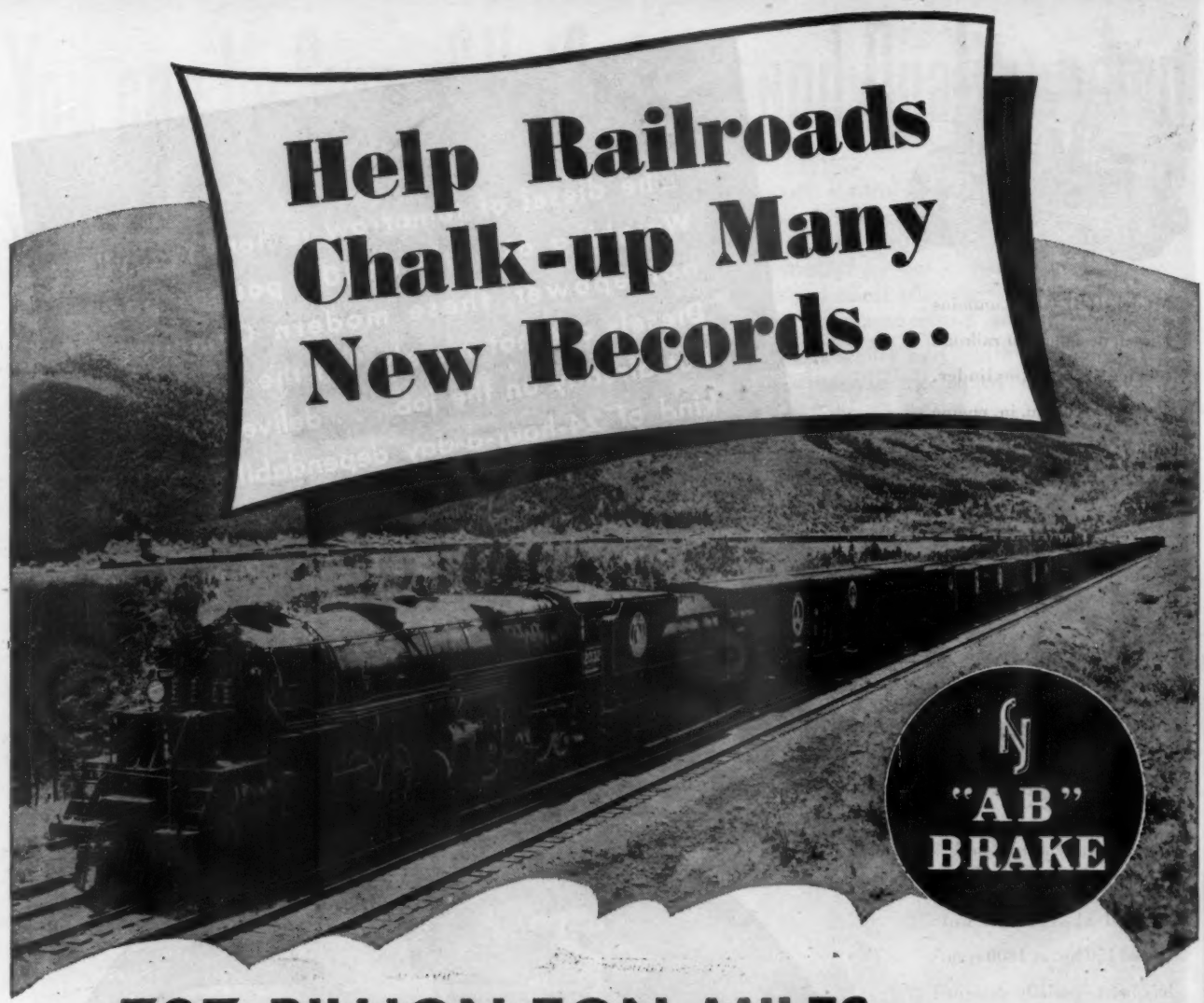


Series NH-600 and NHS-600 Cummins Diesels are "higher horsepower" versions of the Model H. Both are 5½" x 6" dual valve engines, the NH developing 200 hp. at 2100 rpm., and the supercharged NHS, 275 hp. at the same speed.

The diesel of tomorrow is here today! Weighing as little as 10½ pounds per horsepower, these modern Cummins Diesels are not merely "on the boards", but already on the job . . . delivering the kind of 24-hour-a-day dependability and economy you'll demand in the new railroad equipment you will build or operate. That's why it will pay you to power with high speed Cummins Dependable Diesels.

CUMMINS ENGINE COMPANY, INC
Columbus, Indiana





737 BILLION TON-MILES OF FREIGHT IN 1944 —

Thanks to the fighting spirit of the American railroads and modern equipment, every objective on the transportation front has been reached with amazing speed and precision.

In freight service the "AB" Brake has played a very important part in speeding up train movements and contributing to the increase in daily car mileage.

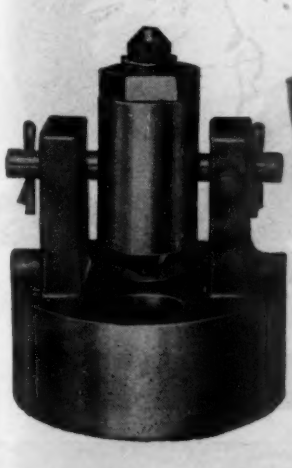
It has made possible a highly efficient and flexible retardation control for long trains at all speeds. It has eliminated those long delays caused by compulsory stops under certain braking conditions. Furthermore, it is a well established fact that the "AB" Brake has helped to reduce damage claims and maintenance costs. Complete standardization should be the aim of every railroad searching for efficient and economical means of meeting post-war competition.

The New York Air Brake Company

420 Lexington Ave., New York City. Plant: Watertown, New York

DIESEL BEARINGS *Do Last Longer*

AND LESS FREQUENT INSPECTIONS ARE NECESSARY



WHEN PREVENTIVE MAINTENANCE *STARTS HERE*



Maximum bearing wear and less frequent bearing inspections are only two of the many important advantages of the Bearing Watchdog System. By installing this crankshaft protection device, wear beyond predetermined standards, or shell-out of connecting-rod and main bearings on your Diesels can be detected in plenty of time to prevent damage to the crankshaft. Any bearing failure, broken connecting-rod or connecting-rod cap or cap bolt will actuate the trip lever resulting in engine shut-down within a few seconds. System operates by compressed air from the main reservoir, through the Serv-O-Motor of any standard hydraulic governor. No electrical circuits or fluids enter the crankcase.

The Bearing Watchdog System has been thoroughly tested and proved on leading railroads. It offers inexpensive insurance against expensive crankshaft repairs and replacements and the loss of many hours operating time for your Diesels. Write today for detailed information.

- **CUTS DIESEL MAINTENANCE COSTS**
- **PROTECTS THE CRANKSHAFT**
- **PERMITS MAXIMUM BEARING WEAR**
- **FREQUENT BEARING INSPECTIONS UNNECESSARY**
- **LOCATES FAULTY BEARING INSTANTLY**
- **SIMPLE . . . POSITIVE . . . LOW MAINTENANCE**
- **PNEUMATICALLY OPERATED**
- **PROTECTS THE ENGINE**

We invite inquiries from Diesel Designing Engineers, Diesel Engine Manufacturers and Diesel Operators.

INSTALL THE

BEARING WATCHDOG SYSTEM in your Diesels

paxton

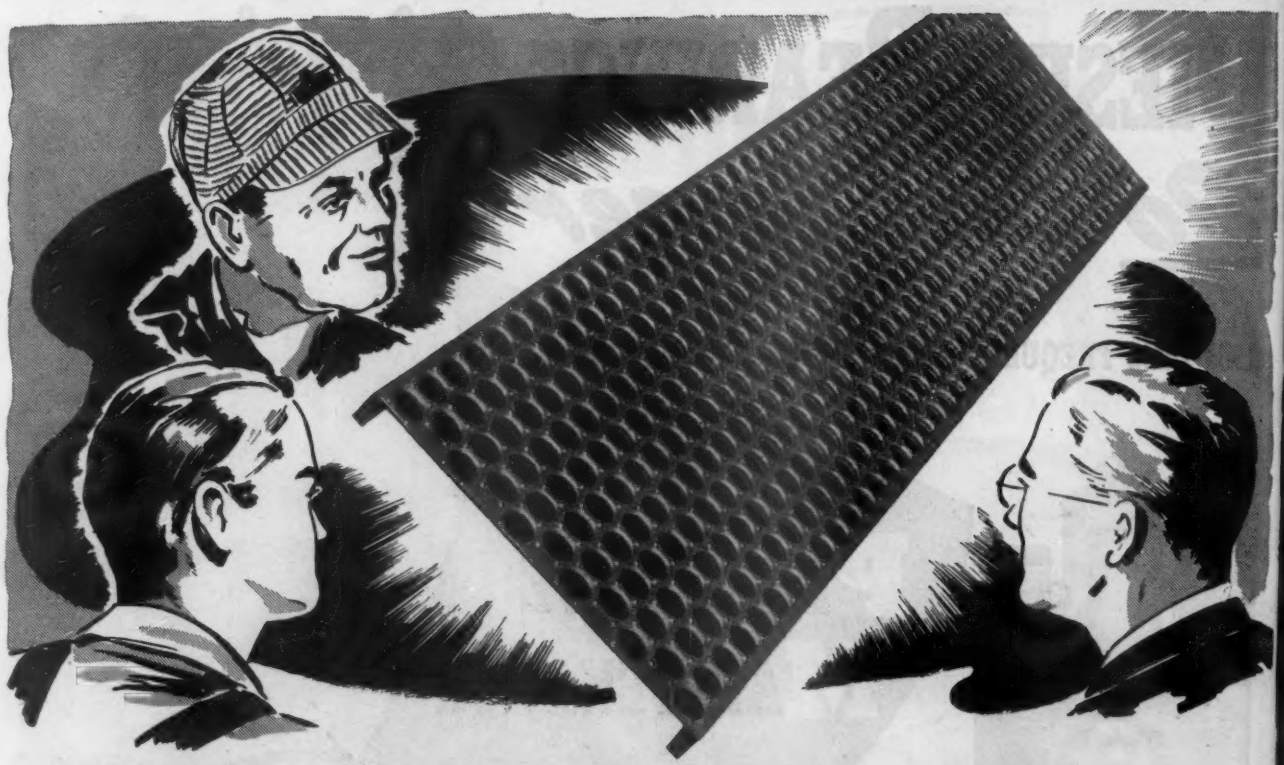
DIESEL ENGINEERING COMPANY

2614 Martha Street
Omaha 5, Nebraska

DIESEL SPECIALTIES ★ PARTS ★ REPAIR SERVICE

A Subsidiary of **PAXTON-MITCHELL COMPANY**

Manufacturers of P-M Metallic Rod Packing



FIRST CHOICE OF ALL THREE

Morton "Open-Grip" Safety Tread

Safety, convenience and low cost are the factors that give Morton "Open-Grip" Safety Tread highest rating among railroad men everywhere. Here's how this self-clearing, all-weather tread for car running boards, brake steps and platforms stacks up with men who know it best.

TRAINMEN: Safer footing provided by "Open-Grip" in all kinds of weather means fewer accidents to train crews. Curved, self-clearing surfaces of circular openings provide no hold for snow or ice. Raised perforated buttons afford positive traction.

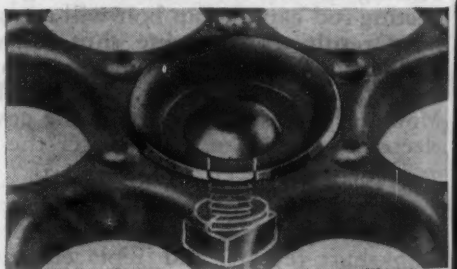
SHOP MEN: One-piece construction of "Open-Grip" makes it easy to install, reduces maintenance requirements. The simple cup and bolt fastening device saves labor and allows speedy replacement of damaged sections.

MANAGEMENT: Its relatively light weight holds down original cost of "Open-Grip" tread, adds less deadweight to each car. Low maintenance requirements and ease of installation help bring overall costs down still more.

Get complete details on economically-priced "Open-Grip" tread from our nearest office. Write for prices and delivery dates today.



Cut-away view showing added strength that results from deep drawn flanges around drainage openings. Anti-slip buttons increase safety of tread.



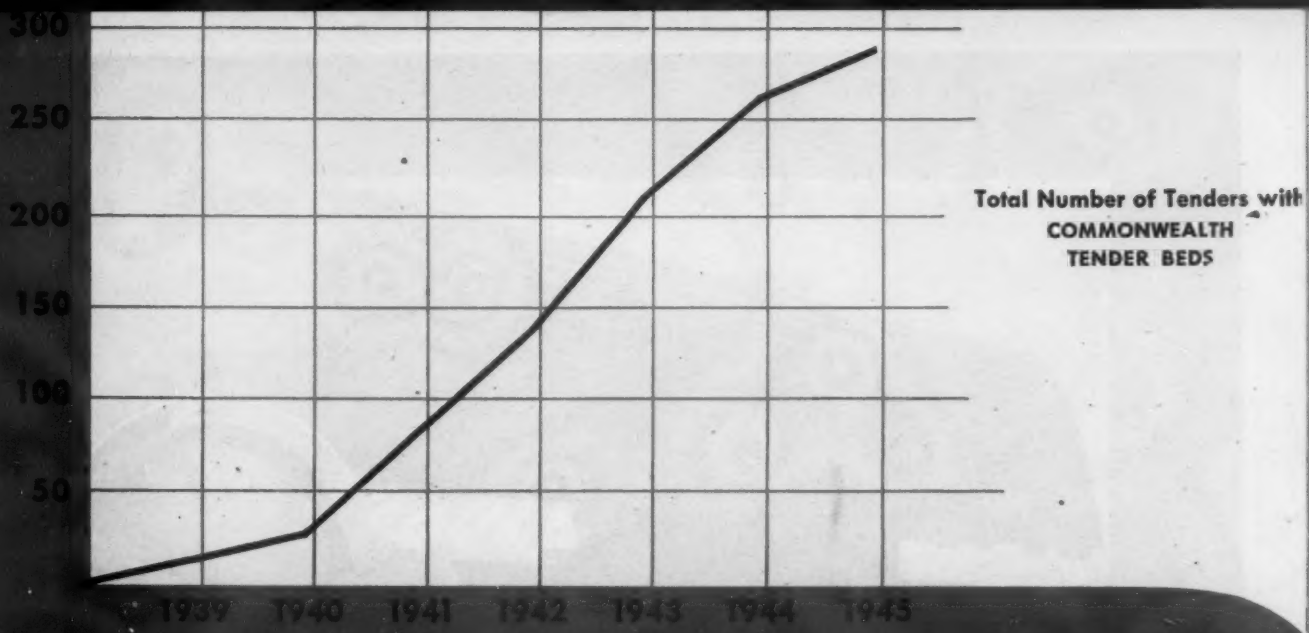
Easy, quick installation is achieved through this special device which fits any of the open areas of the tread. Rotating, elongated bolt slot compensates for ordinary variations in saddle punching.

District Sales Offices

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MORTON MANUFACTURING CO.

5105 WEST LAKE STREET • CHICAGO 44, ILLINOIS



Build Your Next New Tenders with

COMMONWEALTH TENDER BEDS

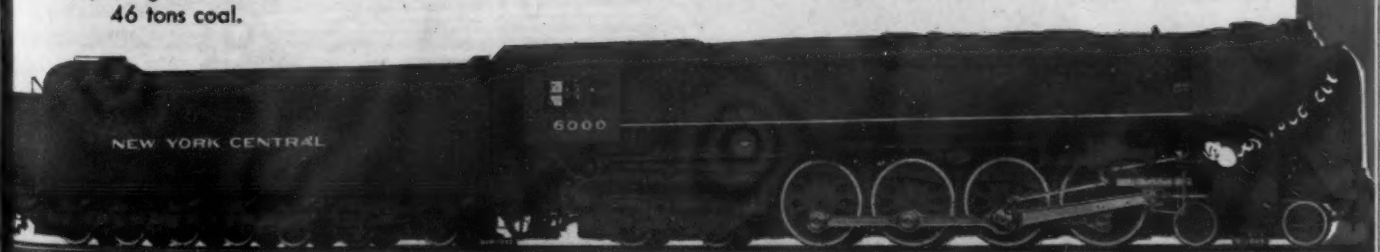
Here's *convincing proof* of the outstanding advantages of Commonwealth Cast Steel Tender Beds, for each year since their introduction in 1939 sees an increasing number of locomotives with this advanced type of tender construction.

Only tenders with Tender Beds provide:

- ***Greater capacity within fixed limits of size***
- ***Less weight per gallon capacity***
- ***Larger diameter wheels—lower center of gravity***
- ***Greater reliability and lower maintenance costs***

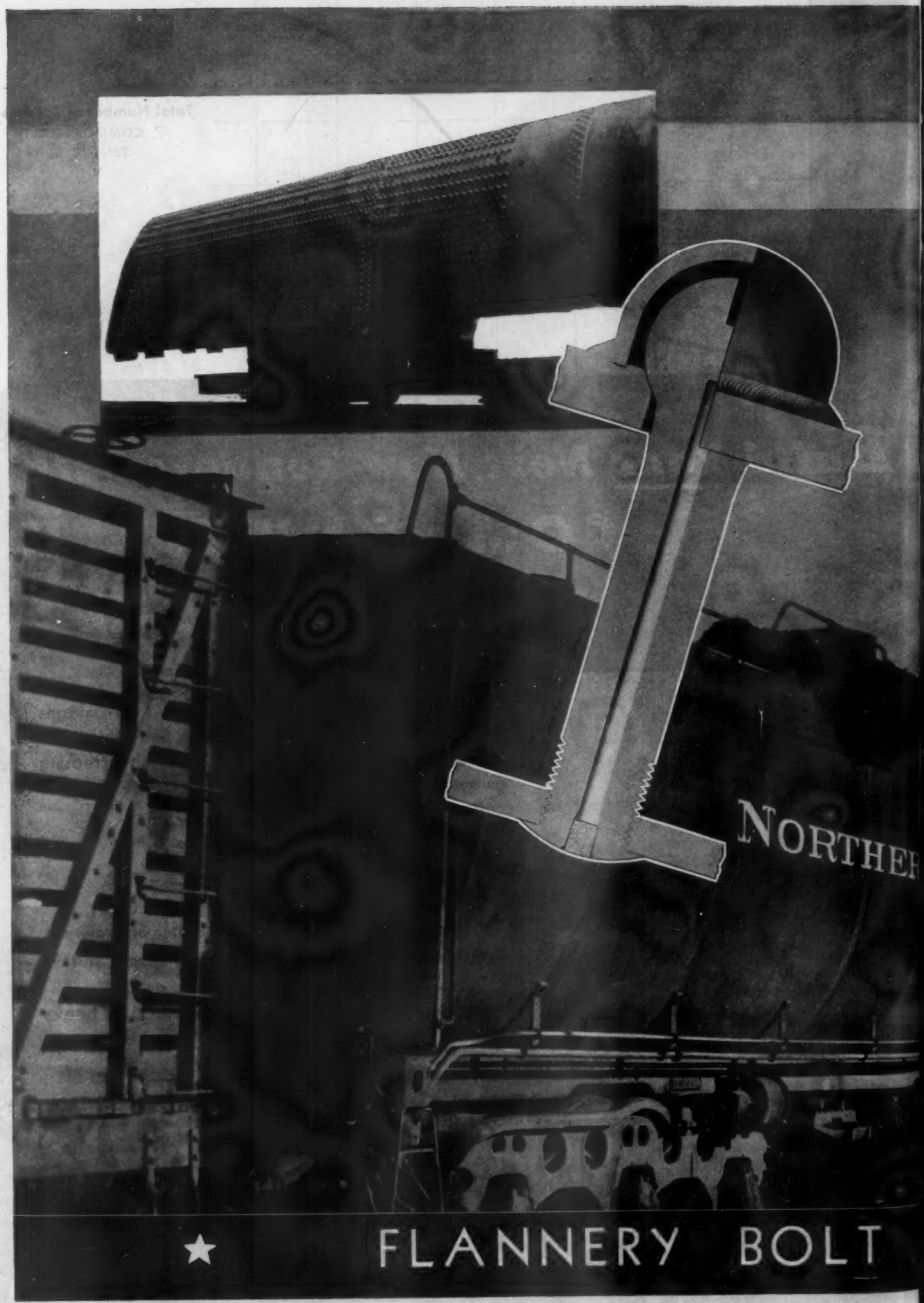
These tenders are making history carrying heavy loads on fast schedules.

N. Y. C.'s NEW NIAGARA TYPE
Passenger or Freight Locomotive.
Tender Capacity:
18,000 gallons water
46 tons coal.



GENERAL STEEL CASTINGS

EDDYSTONE, PA. GRANITE CITY, ILL.


NORTHER
FLANNERY BOLT

RECORD BREAKING

Steam LOCOMOTIVES

are equipped with

HOLLOW *Flexible* STAYBOLTS



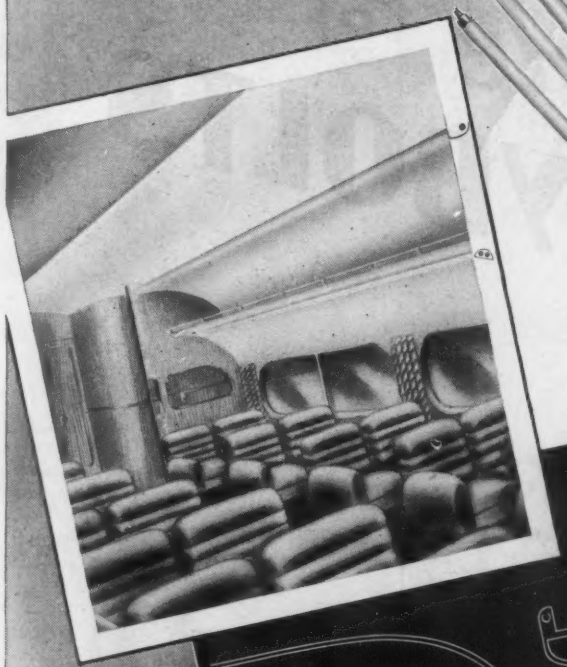
COMPANY BRIDGEVILLE, PENNSYLVANIA

Another Product of General Electric Lamp Research

New G-E Mazda Slimline Fluorescent Lamps

Here's a brand-new lighting tool for tomorrow! A tool that offers greater flexibility in design and more versatility in performance. G-E Slimline lamps, with *lengths up to eight feet, small diameter,* and *two levels of light from each size* open up a variety of new lighting effects and services. Because they fit into small space and their light can be redirected more efficiently, G-E Slimline lamps permit many helpful new uses, especially in railway cars, stations and offices.

Other outstanding features: **1.** Instant starting. **2.** Long life. **3.** Higher efficiency (approximately 60 lumens per watt). **4.** Single or multiple operation. **5.** Dependable uniformity. *Availability:* Quantity production will proceed as soon as conditions permit.





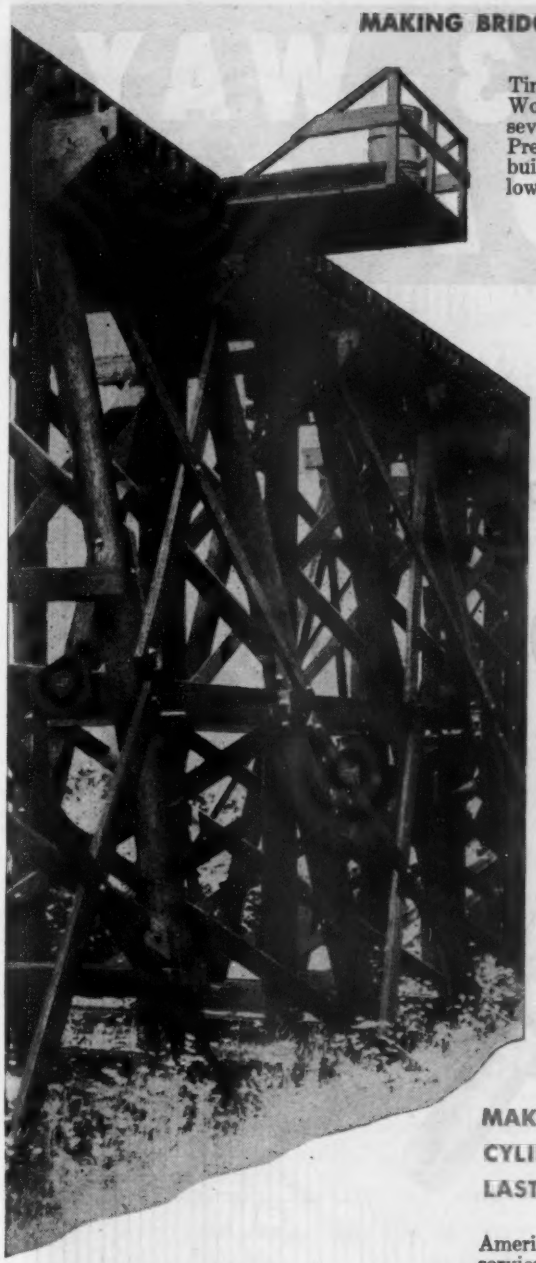
BUY MORE WAR BONDS AND HOLD THEM

Hear the G-E radio programs: "The G-E All-Girl Orchestra," Sunday 10:00 p. m. EWT, NBC; "The World Today" news, Monday through Friday 6:45 p. m. EWT, CBS; "The G-E Houseparty," Monday through Friday 4:00 p. m. EWT, CBS.

G-E MAZDA LAMPS

GENERAL ELECTRIC

MAKING BRIDGES LAST LONGER



Timber structures pressure-creosoted by Koppers Wood Preserving Division are protected against severe weather exposure, decay and termite attack. Pressure-treated wood ranks with other permanent building materials in long service life, and is usually lower in first cost and annual maintenance charges.

KOPPERS

and the Railroads



MAKING CYLINDER PACKING LAST LONGER

American Hammered Bronze-Iron Cylinder Packing is giving service up to 200,000 miles and is helping railroads to make more locomotives available for handling wartime traffic.

MAKING MASONRY LAST LONGER



Concrete and masonry exposed to water should be protected with coal tar pitch waterproofing or dampproofing to prevent spalling or deterioration. Send for the Koppers folder on Membrane Waterproofing which explains how this protection makes foundations, bridge floors, tunnels, retaining walls, and other structures last longer.

MAKING ROOFS LAST LONGER



Koppers Coal Tar Pitch Roofing has a property known as "cold flow" which enables it to seal itself when small surface breaks occur (as they may do in any roof, because of vibration, settlement of the building, etc). This makes roofs last longer.

KOPPERS

KOPPERS COMPANY, INC. PITTSBURGH 19, PA.

THE INDUSTRY THAT SERVES ALL INDUSTRY

Buy War Bonds and Keep Them!

SUPERIOR 3-WAY FLUE ROLLER

Cuts "down-time" for Flue Rolling 80 per cent



One Operation-

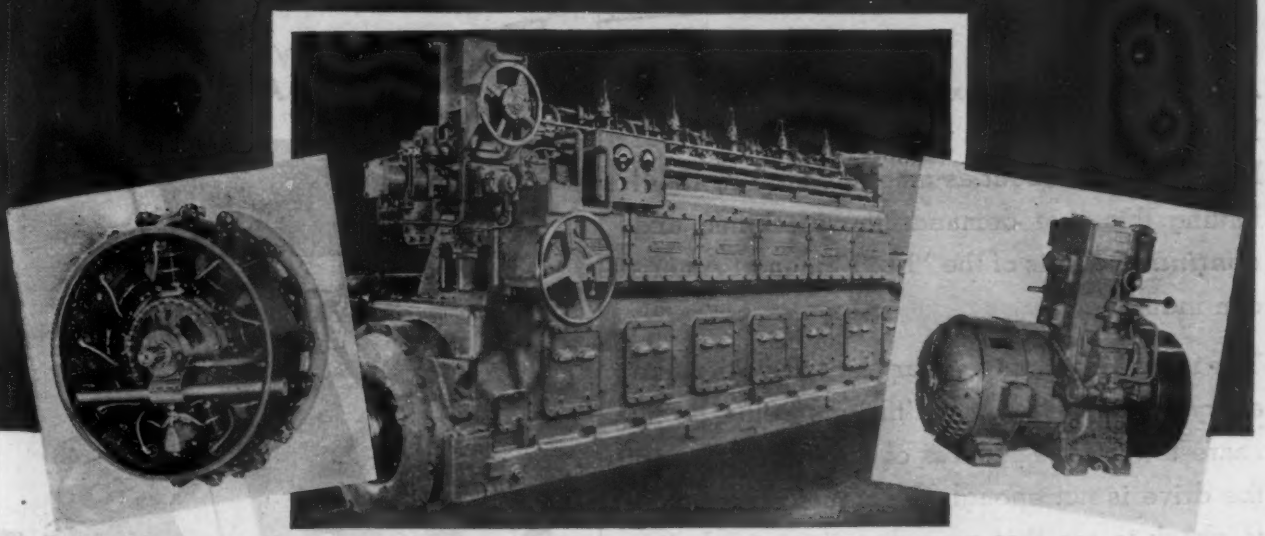
Expands
Prossers
Flares

American railroads are doing a job today that would have been impossible a few years ago. Improved shop practice is one reason. Modern economic devices like the Superior 3-Way Flue Roller are reducing "down-time" and enabling locomotives to stay on the road for longer runs and heavier loads. The 3-Way Flue Roller not only saves time, it does a better job. — Prevents flues from becoming distorted, eliminates fire cracking in the fire box end, and avoids the hazard of flying chips. Available for prompt shipment.

SUPERIOR RAILWAY PRODUCTS CORP.
7501 Thomas Boulevard, Pittsburgh, Penna.

PORUS-KROME

undercover. . but unequaled



PORUS-KROME has nothing to hide . . . even though it is always undercover and out of sight. Its records for increasing the life of cylinders and liners are still unequaled, and the results are comparable in every type of heavy-duty engine . . . big marine Diesel, radial aircraft engine, or even small auxiliary power plants.

PORUS-KROME is hard, pure chromium which is applied to cylinder bores by the Van der Horst process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil, feeding it back as needed. It reduces corrosion and wear, and multiplies cylinder life 4 to 20 times . . . ring life 3 to 5 times.

Although the Army and Navy now absorb the entire production of its three plants, Van der Horst is eager to plan with engine manufacturers for postwar use of PORUS-KROME. Write today for full information about the advantages of greater reliability and lower maintenance cost that PORUS-KROME will give to your engines.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST

U. S. PATENTS 2,040,578 AND 2,314,604

VAN DER HORST CORPORATION OF AMERICA

AN AFFILIATE OF DRESSER INDUSTRIES

OLEAN • NEW YORK
CLEVELAND 11 • OHIO


NORTHE
FLANNERY BOLT

RECORD BREAKING

Steam LOCOMOTIVES

are equipped with

HOLLOW *Flexible* STAYBOLTS



COMPANY BRIDGEVILLE, PENNSYLVANIA

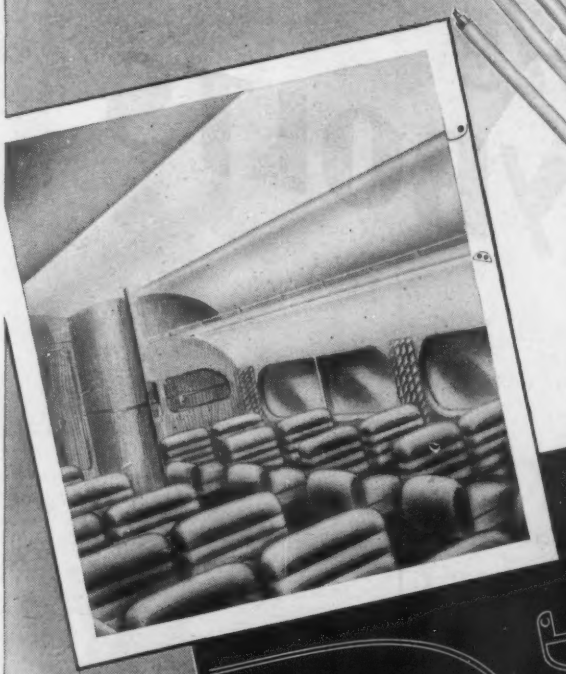
Another Product of General Electric Lamp Research

New G-E Mazda Slimline Fluorescent Lamps

Here's a brand-new lighting tool for tomorrow! A tool that offers greater flexibility in design and more versatility in performance. G-E Slimline lamps, with *lengths up to eight feet, small diameter,* and *two levels of light from each size* open up a variety of new lighting effects and services. Because they fit into small space and their light can be redirected more efficiently, G-E Slimline lamps permit many helpful new uses, especially in railway cars, stations and offices.

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BUY MORE WAR BONDS AND HOLD THEM



LIGHTING DETAIL

Fit into small space for continuous cove lighting

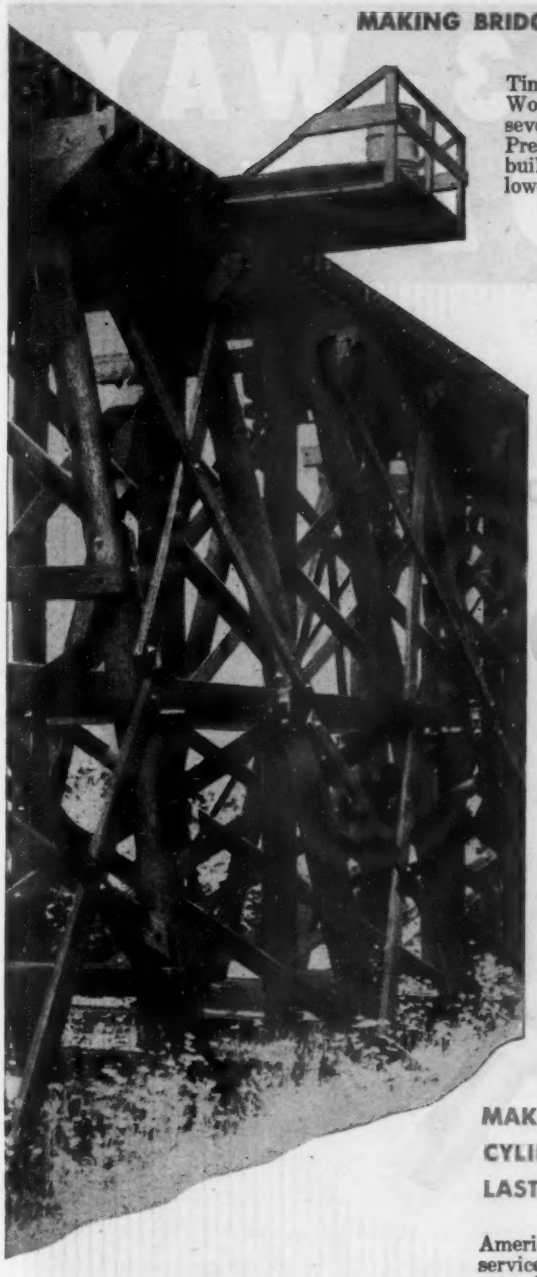
Permit compact shallow down-lighting units to provide new eye comfort for passengers

G-E MAZDA LAMPS

GENERAL ELECTRIC

Hear the G-E radio programs: "The G-E All-Girl Orchestra," Sunday 10:00 p. m. EWT, NBC; "The World Today" news, Monday through Friday 6:45 p. m. EWT, CBS; "The G-E Houseparty," Monday through Friday 4:00 p. m. EWT, CBS.

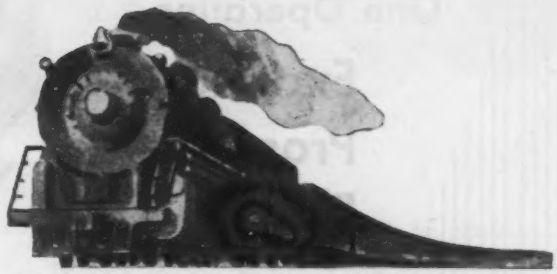
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Timber structures pressure-creosoted by Koppers Wood Preserving Division are protected against severe weather exposure, decay and termite attack. Pressure-treated wood ranks with other permanent building materials in long service life, and is usually lower in first cost and annual maintenance charges.

KOPPERS

and the Railroads



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American Hammered Bronze-Iron Cylinder Packing is giving service up to 200,000 miles and is helping railroads to make more locomotives available for handling wartime traffic.

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Concrete and masonry exposed to water should be protected with coal tar pitch waterproofing or dampproofing to prevent spalling or deterioration. Send for the Koppers folder on Membrane Waterproofing which explains how this protection makes foundations, bridge floors, tunnels, retaining walls, and other structures last longer.

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Koppers Coal Tar Pitch Roofing has a property known as "cold flow" which enables it to seal itself when small surface breaks occur (as they may do in any roof, because of vibration, settlement of the building, etc). This makes roofs last longer.

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KOPPERS COMPANY, INC. PITTSBURGH 19, PA.

THE INDUSTRY THAT SERVES ALL INDUSTRY

Buy War Bonds and Keep Them!

SUPERIOR 3-WAY FLUE ROLLER



Cuts "down-time" for Flue Rolling 80 per cent

One Operation-

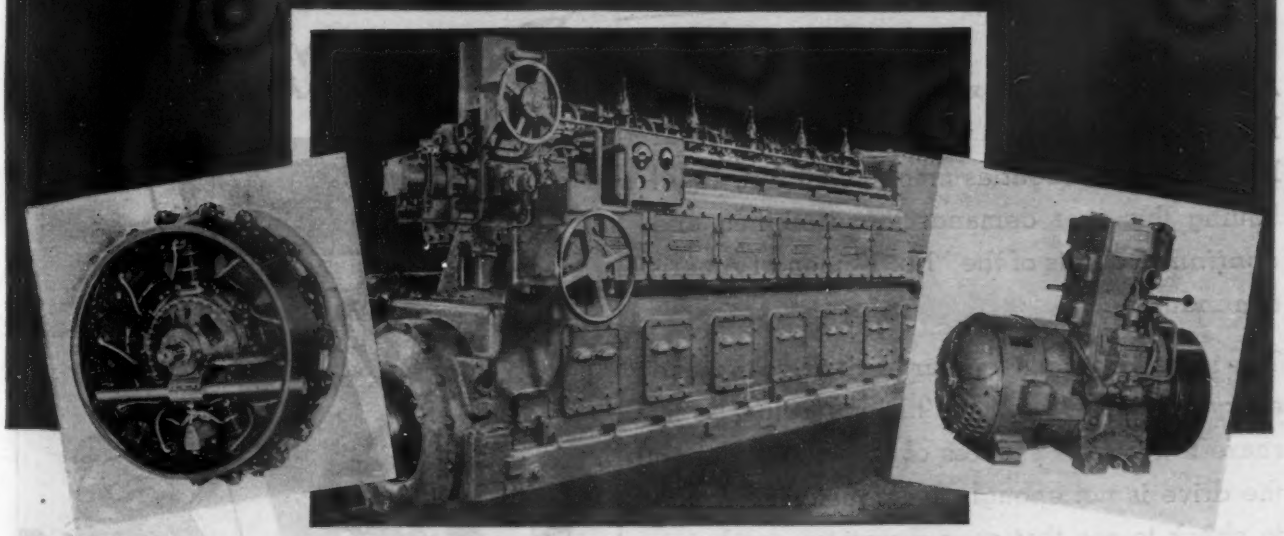
Expands
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American railroads are doing a job today that would have been impossible a few years ago. Improved shop practice is one reason. Modern economic devices like the Superior 3-Way Flue Roller are reducing "down-time" and enabling locomotives to stay on the road for longer runs and heavier loads. The 3-Way Flue Roller not only saves time, it does a better job. — Prevents flues from becoming distorted, eliminates fire cracking in the fire box end, and avoids the hazard of flying chips. Available for prompt shipment.

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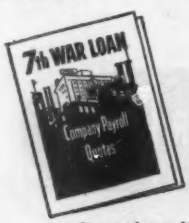
A job for seasoned executives—this 7th War Loan! Especially when we've got to make 2 war loans total just about as much as all 3 in 1944! Putting this over demands the combined and *continued* efforts of the "No. 1" men of American industry.

This means marshaling your plant drive to make every payday—from now 'til June 30th—do its share toward the success of the 7th. Directing the drive is not enough. It's equally important to check to see that your directions are being carried out—intelligently!

For example, has every employee had:

1. an opportunity to see the new Treasury film, "Mr. and Mrs. America"?
2. a copy of "How To Get There," the new Finance Division booklet?
3. a new bond-holding envelope with explanation of its convenience?
4. 7th War Loan posters prominently displayed in his or her department?
5. information on the department quota—and an urgent personal solicitation to do his or her share?

Remember, meeting—and beating—your highest-yet 7th War Loan quota is a task calling for "No. 1" executive ability. Your full cooperation is needed to make a fine showing in the 7th! Do not hesitate to ask your local War Finance Chairman for any desired aid. It will be gladly and promptly given.

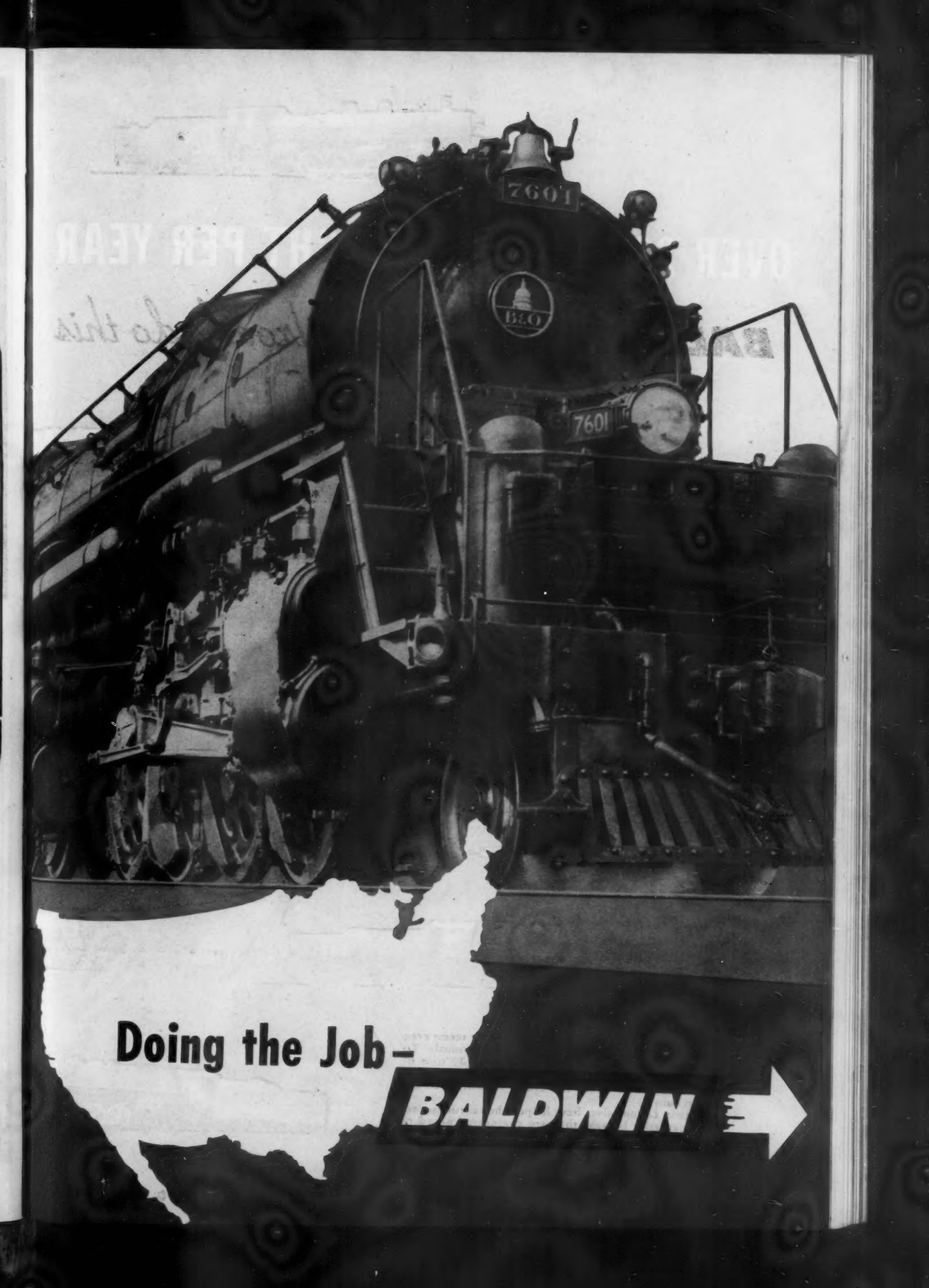


If you haven't a copy of this important booklet, "7th War Loan Company Quotas," get in touch immediately with your local War Finance Chairman.

The Treasury Department acknowledges with appreciation the publication of this message by

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BALDWIN



OVER 20 TONS OF FREIGHT PER YEAR fo

BALDWIN *helps the railroads do this* t



The magnificent job the railroads have done seems even greater when it is reduced to terms of individuals. To take care of civilian and War needs, over 20 tons of freight are handled each year for every American man, woman and child—from the oldest inhabitant to the newest baby.

Baldwin Locomotives have helped the railroads meet this emergency because they are engineered ahead of needs. The Baldwin, that you buy today will give you the same extra capacity to meet the unexpected needs of tomorrow.

BALDWIN SERVES THE NATION WHICH THE RAILROADS HELPED TO BUILD

for every man, woman and child in the Nation

titanic job



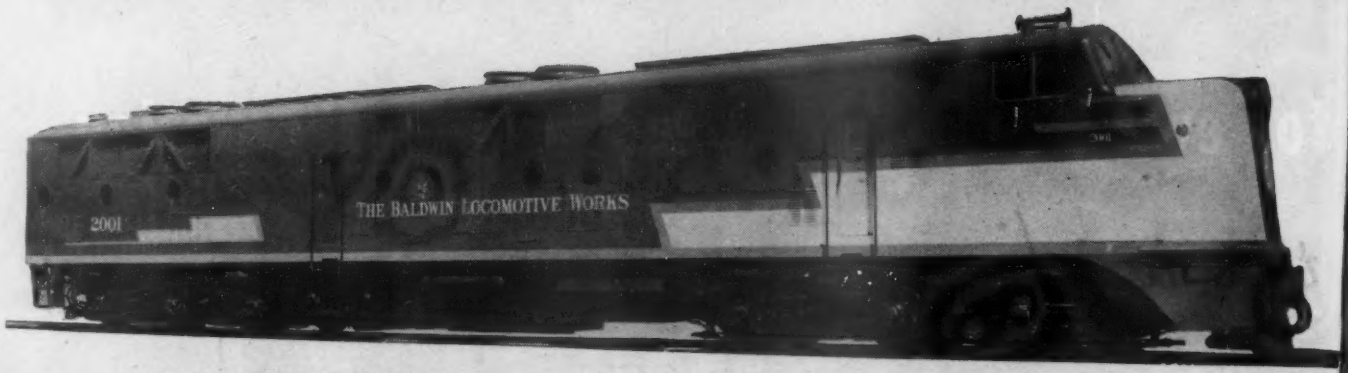
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THE BALDWIN GROUP

BALDWIN

LOCOMOTIVES

The Baldwin Locomotive Works, Locomotive & Ordnance Division, Philadelphia 42, Pa. Offices: Philadelphia, New York, Chicago, Washington, Boston, Cleveland, St. Louis, San Francisco, Houston, Pittsburgh, Detroit.

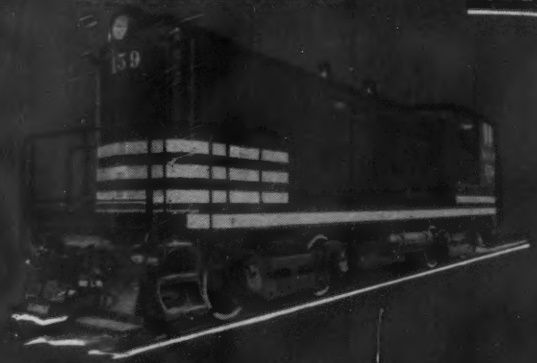
MAIN LINE DIESEL-ELECTRIC LOCOMOTIVES



Baldwin-Westinghouse diesel-electric locomotives for main line freight and passenger service, designed and built by Baldwin with Westinghouse electrical equipment, embody the engineering skill and quality construction that has been associated with the Baldwin name for more than a century. The 2000-hp. unit shown can be operated as a single locomotive or combined with similar units to form a 4000-hp. or a 6000-hp. locomotive, covering the entire power range required in modern main line railroad operation.

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HELP TO EXPEDITE
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BALDWIN-
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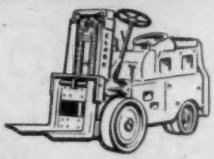
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ELECTRIC CORPORATION, EAST PITTSBURGH, PA.

The test of CHARACTER . . .

TO THOSE WHO KNOW THEM, Clark Gears and Forgings possess vital technical "talking points"—their carefully planned metallurgical "breeding;" their closely controlled grain structure for toughness and stamina; their sound designs engineered by long practical experience; all are conspicuous qualities long since proved by the patient Test of Use.

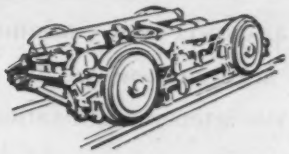
For those not yet acquainted with these products, there's a good and safe pre-test, the Test of Character—a quick, trustworthy guide to thorough satisfaction: the simple fact that these products are built by the Men of Clark.





FORK TRUCKS AND INDUSTRIAL TRACTORS

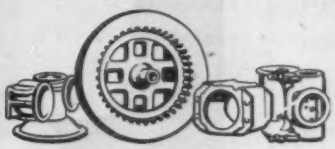
GEARS AND FORGINGS



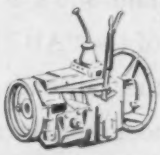
STREET RAILWAY CAR TRUCKS



One piece, forged, heat treated AXLE HOUSING



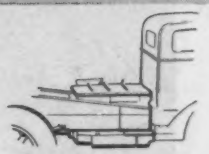
ELECTRIC STEEL CASTINGS



TRANSMISSIONS for Trucks, Busses, Tractors



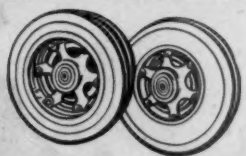
CELFOR HIGH-SPEED DRILLS AND REAMERS



POWER BOOSTER for 1½-ton Trucks



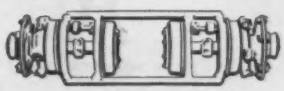
BLIND RIVETING PROCESS



METAL SPOKE-TYPE WHEELS for Trucks, Busses, Trailers



AXLES—front and rear for Trucks, Busses, Tractors



EASY-ROLL TRAILER AXLE

CLARK EQUIPMENT COMPANY

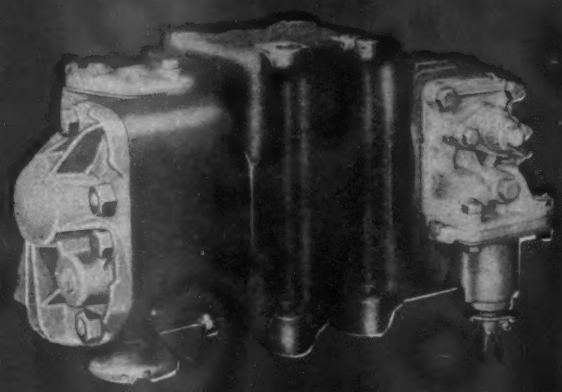
RAILWAY DIVISION - - - BATTLE CREEK, MICHIGAN

the "AB" BRAKE Contributes to FREIGHT PROGRESS

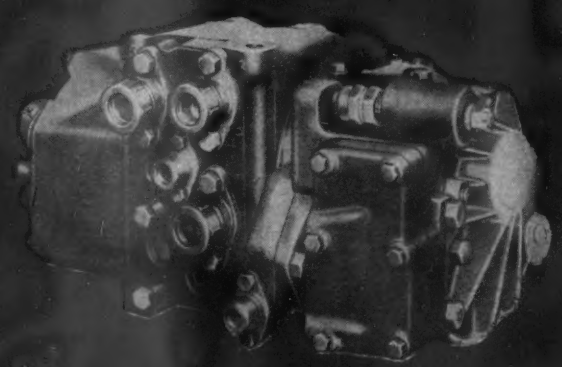
Incredible is the word most often used in describing the wartime accomplishments of the railroads. Handicaps in man-power and equipment shortages have been surmounted by *enhanced efficiency*—intensive utilization of men and equipment.

A solid base for greater equipment utilization was laid down a decade ago with the advent of the "AB" Brake. And upon this base, the railroads have admirably built an almost unbelievable traffic record for fast and efficient train handling.

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AB Valve



AB-1-B Valve

Westinghouse Air Brake Company
Wilmerding, Pa.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

Vol. 118 — May 19, 1945 — No. 20

PUBLISHED EACH SATURDAY BY THE SIMMONS-BOARDMAN PUBLISHING CORPORATION, 1309 NOBLE STREET, PHILADELPHIA 23, PA., WITH EDITORIAL AND EXECUTIVE OFFICES AT 30 CHURCH STREET, NEW YORK 7, N. Y. AND 105 W. ADAMS STREET, CHICAGO 3, ILL.

WASHINGTON 4, D. C.: 1081 NATIONAL PRESS BUILDING. CLEVELAND 13: TERMINAL TOWER. SEATTLE 1: 1033 HENRY BUILDING. SAN FRANCISCO 4: 300 MONTGOMERY STREET, ROOMS 805-806. LOS ANGELES 14: 530 WEST 6th STREET.

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Freight Progress Annual

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The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

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and...

Good Lagging means

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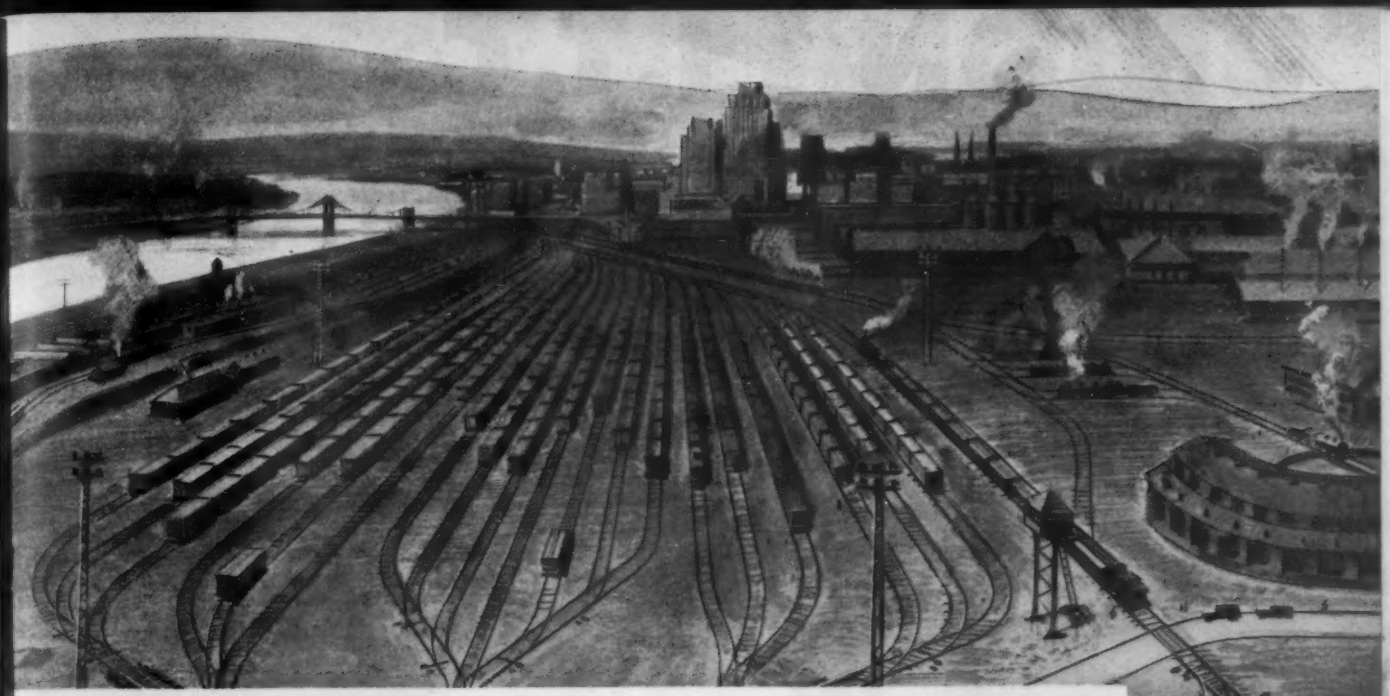
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To handle wartime traffic

or provide peacetime service . . .

Traffic in TERMINAL AREAS must be kept moving

Congested terminal areas mean wasted time—time lost in handling cars consigned to the areas, time lost by arriving trains, time lost in making up trains and getting them started on their way.

And time lost in terminal areas cannot be made up by any practicable increase in train speeds.

Cars must move through terminal areas without delay . . . today, so that supplies may move in an endless stream to the fighting fronts . . . tomorrow, so that railroads can meet the competition of other forms of transportation and give shippers the service they will demand.

To move more cars, more rapidly —that, in brief, is the railroads' problem. Our engineers will be glad to help you solve it.

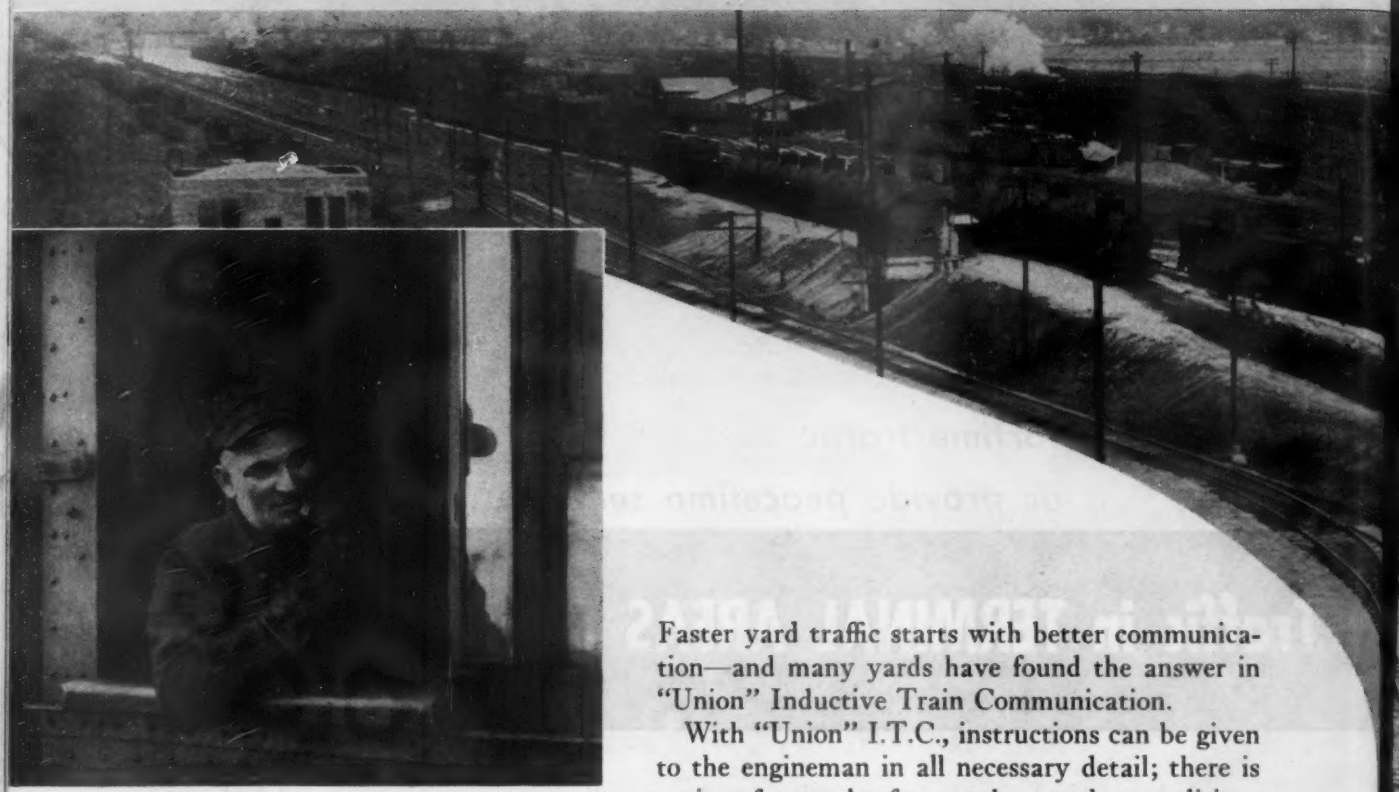
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NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO



"UNION" I.T.C. - - - - expedite yard traffic





In yards, "Union" I.T.C. provides dependable one-way or two-way voice communication between the hump-conductor's office and the locomotive.

Faster yard traffic starts with better communication—and many yards have found the answer in "Union" Inductive Train Communication.

With "Union" I.T.C., instructions can be given to the engineman in all necessary detail; there is no interference by fog, smoke or other conditions which might obscure wayside signals in the yard. When special situations arise, as they so often do in yard operation, "Union" I.T.C. makes it easy to meet them.

★ ★ ★

The "Union" Electro-pneumatic Car Retarder System provides the most modern means of efficient car classification. Peak humping capacity is available at all times. Operators manipulate the levers on their control machines to position power-operated switches and Model 31 Car Retarders so that each car is delivered to its desired classification track at proper coupling speed.

Winter or summer, storm or sunshine, "Union" car retarders stay on the job—and records show that many yards with car retarders are now handling more cars in two eight-hour tricks than they formerly handled in three.

UNION SWITCH & SIGNAL COMPANY

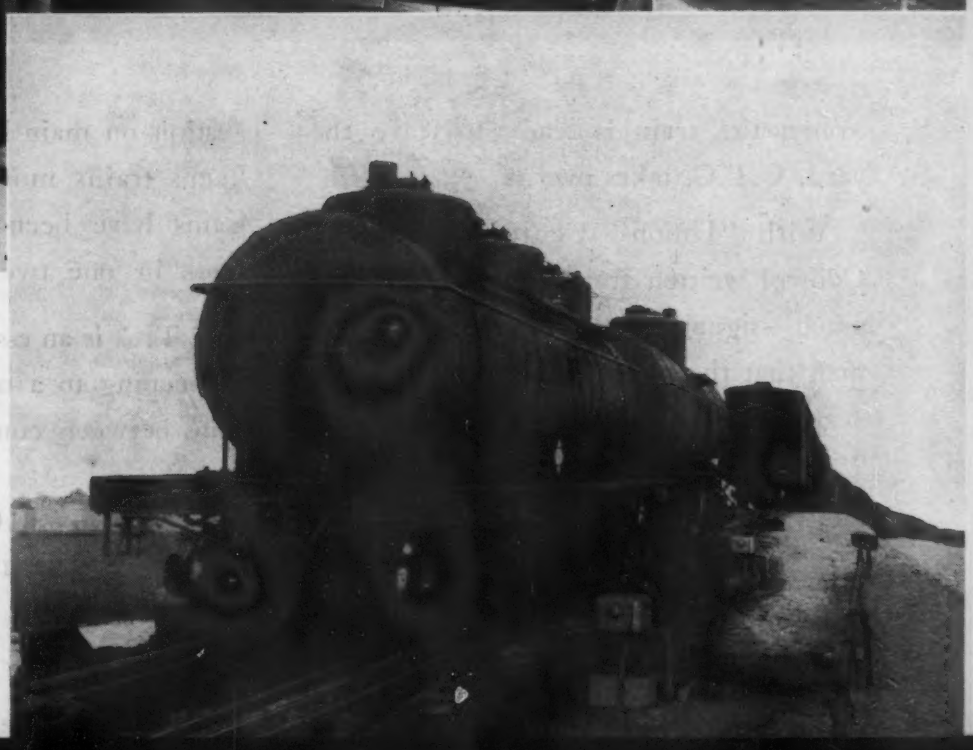
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and CAR RETARDERS by reducing delays



With a turn of the lever, the operator can stop any car easily and surely. There are four pressures from which to select, and pressure may be changed even after the car enters the retarder.





C.T.C. handles freights promptly!

When the train is ready to leave the yard, C.T.C. takes over.

With "Union" Centralized Traffic Control written train orders are eliminated—signal indication tells the engineman that the track is ready for him.

There is no time lost because of congestion on main line tracks, for C.T.C. keeps trains moving. More than 100 trains have been handled on a single track in one twenty-four hour period!

C.T.C. is an essential factor in the job of keeping to a minimum the shipping time between consignor and consignee.

UNION SWITCH & SIGNAL COMPANY

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NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

Freight Progress at a Glance

CAPACITY PERFORMANCE: The articles in this issue contribute significantly toward (if they do not completely supply) the answer to the question: What is the capacity of the American railway system? Evidence accumulated over the past year or so, as set forth herein, leaves little room for doubt that these railroads are carrying right now, and have been for some months, just about all the traffic they can move with their present plant and equipment and labor force. There is equally good evidence, likewise, to show that more and better facilities are in the making, so they can better perform the tasks of peace when the opportunity comes to do so. The war job's magnitude has been challenging and exhausting, but it has not been overwhelming. Commercial business has not always been handled with the speed and efficiency to which the railroads' customers are ordinarily entitled, but it has been handled. When the demands of the armed forces for preferred service slacken, when new and superior cars and locomotives begin to roll up the performance records for which new and superior roadbed and structures and signals and supplementary facilities will provide a foundation—then the shipper and traveler will discover that these war-tested railroads still have undeveloped potentialities for economical, dependable, and proficient service.

●

POST-WAR PROGRAM: Whatever the reasons may have been for the scanty allocations of materials and equipment the railroads have had so far in this war, there can be even less excuse now to restrict their opportunity to provide for their needs—as the demand on them for transportation for war purposes continues unabated—if railway equipment and materials are to be sent abroad for the post-war rehabilitation of foreign railways. This point is developed in our leading editorial, while other editorial comment focuses attention on the obligation which the railroads themselves have to formulate and energize, without delay, a broad program to enable them to provide better post-war service under a government policy favorable to the survival of private enterprise.

●

FOUNDATION FOR PROGRESS: Some hints of what the railroads' technical men intend to do, as soon as they can, to make better railroads, and some idea of what they have done, in spite of abnormal conditions, to bring about plant improvements even under the strain of today's traffic—such is the content of the engineering article in this issue.

●

NATURAL OBSTACLES: To maintain the pace which the armed forces have set for the railroads has regularly required the utmost use of their equipment and long hours on the job for their officers and employees. When, on top of this unrelenting demand for all-out performance, the worst winter in many years struck the busiest railroad territory in the country, freezing up yards, blocking main lines with derailments, and generally disrupting schedules and frustrating car movements, the machine might have repeated the story of 1918. But it didn't collapse. What the railroads did—with the cooperation of shippers, including the Army, and the help of the O. D. T. and the I. C. C.—to cope with this extraordinary situation and keep the flow of war freight liquid, is described in an article in this issue.

●

DELAY ELIMINATORS: The contribution of automatic signals, car retarders and centralized traffic control to the railroads' performance record in this war has been essentially in the minimization of delays to moving trains, as the signaling article herein demonstrates with abundant examples and convincing figures. Too highly experimental, yet, to be of any general importance in this war, but full of promise of better service in the future, are the train communication systems which a number of roads are making plans to install as suitable equipment becomes available.

●

BIGGEST CUSTOMER: The size of the job the railroads have been doing for the armed forces is impressively indicated in one of this issue's articles. In the month of March alone, for example, the War Department's transportation bill was almost $213 million, and it would have been very much larger than that except for the land-grant rate racket—a rate concession which Congress seems still to be willing to have the government take advantage of at the expense of the commercial shipper. In the same month unloadings at the ports averaged 6,713 cars daily. And now new levels of accomplishment must be attained by the lines serving the Pacific coast.

●

MOTIVE POWER: Perhaps the most serious deficiency in the physical facilities with which American railroads went into World War I was in motive power. This time it was different. By putting the lion's share of the job on such new locomotives as they had—both steam-powered and Diesel-electric—these railroads have been pretty well able, in this war, to move all the freight that could be loaded. The motive power article in this issue indicates some of the characteristics that enable modern engines to keep on the road, hitting high speeds with tonnage trains.

●

STARVATION RATIONS: Some idea of the parsimonious diet the railroads have had to live on, while working as an indispensable part of the war machine, is conveyed by the data herein on the differences between the requests their claimant agency made for critical materials and the allocations that were granted. Further complicating the situation were taxation policies discouraging accumulation of reserves for post-war expenditures and government pricing policies discouraging the production now of highly essential supplies—crossties particularly—that might otherwise be available in sufficient volume to keep the railroads in a reasonably healthy condition.

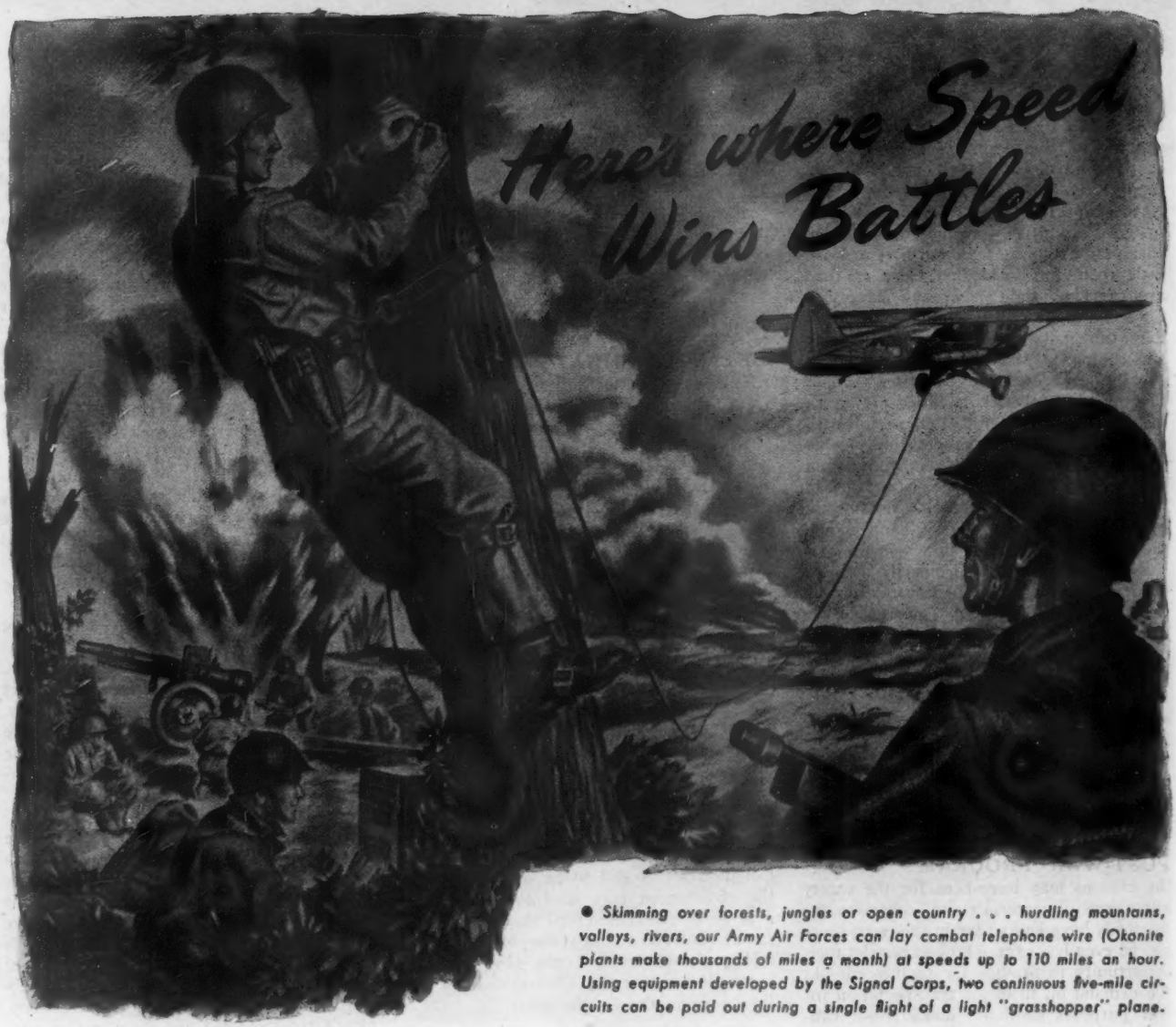
SHIPPERS' VIEWPOINT: Some of the weaknesses in the national transportation policy, as it is now formulated and applied, are pointed out in Charles W. Braden's article herein. Such weaknesses are analyzed from the standpoint of the public interest, because it is in the shipper's own interest (in the long run) to see the public's interest best served. The author warns believers in private enterprise to bestir themselves to see that advantage is not taken of these weaknesses—perhaps by those whose sympathies run to socialization of industry—to make it economically impossible for private enterprise to stay in the railroad business. All facilities of transportation should be on a common self-sustaining basis. Publicly-financed additions to the transportation structure should have to pass the test of public convenience and necessity. The beneficiaries of federally-financed facilities should begin to pay for them. All transportation should be regulated by one agency, which should not undertake partisan crusades for the advantage of any single form of transportation. With such additions to the principles set forth in the national transportation policy, private capital may still see some chance for profitable employment in a field now in danger of becoming an exclusive reservation for tax-derived capital.

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MEN WANTED: The statistical picture of a problem which the railroads share with most industries—the shortage of help, especially of skilled men—is set forth in this issue. Undermanned shops and yards have not been able to keep pace with the demands made upon them by the current velocity of traffic, and these demands are more likely to increase than to decrease as the government's redeployment and reconversion programs get into high gear. Some hope is seen, however, in the likelihood that there will be more men available for railroading as cut-backs release large numbers of war plant employees, and as the Army's discharge rate is stepped up.

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CAR SUPPLY: Pearl Harbor found the railroads adequately (though not generously) equipped to move the traffic then being offered them. No one, probably, would have predicted then, however, that they could move, almost without any additional equipment, the traffic that they have handled since, with the complete mobilization of the country's productive power. The fullest cooperation of shippers has been required to achieve such unparalleled car utilization. Nevertheless, the cars themselves have been made to produce more transportation than freight cars ever produced before. Now they are beginning to break down under the strain. The discussion of the possible consequences of that fact, as set forth in one of the articles herein, leads to the grave conclusion that the physical condition of the car inventory may become, within a very few months, the factor determining whether the railroads can continue to carry their load as creditably as they have been doing. The outlook for the immediate future is not at all bright.



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RAILWAY AGE

V-E Day and the Railways

Will cessation of the war in Europe give the railways relief or increase their difficulties? After three and a half years of war on two fronts, they had made the finest record of any American industry and were having more troubles than at any previous time in the war period.

When we entered the war, the railroads had so much less equipment than a decade before that it seemed improbable they would be able to meet all demands. The demands on them for both freight and passenger service far exceeded those expected. The government curtailed their man-power and their acquisition of equipment and materials much more than was anticipated. When they seemed to be working to the limit of their capacity, the whole machine was thrown out of gear in the winter of 1944-1945 by the severest weather, especially in northeastern territory, that had been experienced in a generation.

But in the year 1944 as compared with 1940 they doubled the freight traffic and quadrupled the passenger traffic handled by them. They have succeeded in the spring months of 1945 in virtually remedying the bad conditions caused by the severe winter, carloadings in March, April and May having been exceeding all previous records for those months during the war years. And never since Pearl Harbor has the greatest war effort for production and combat ever made by any nation been hampered by lack of railroad service.

Efficiency FOR VICTORY

This is a record of patriotic and effective endeavor by railroad management, railroad employees, and shippers and government agencies that have cooperated with them, for which the nation can never be sufficiently appreciative and grateful.

It is a fact, however, that when the war in Europe ended conditions of almost every kind on the railroads were showing the effects of the terrific strain to which they had been so long subjected. There was not only unsatisfactory distribution of freight cars as an effect of the winter, but real shortages of almost all kinds partly due to increasing inability to keep so many old cars in repair. Tracks were suffering increasingly from lack of sufficient new rail and ties for replacements. Difficulty of maintaining both equipment and many permanent structures was being intensified by lack of experienced man-power.

With adequacy of railroad service being thus threatened, the war with Japan must be continued with enhanced energy. This will demand increased movement of traffic to the Gulf and Pacific ports, especially the latter. And the railways in the western district, which will be called on to meet this demand, handled 131 per cent more freight traffic in 1944 than in 1940, as compared with increases of 83 per cent in the eastern district and 73 per cent in the southern district.

The estimated further increase in demand on the western lines for freight service is 15 per cent; and to meet it they would have to render 150 per cent more ton-miles of service than in 1940. They could not do this without even more cooperation from shippers and government agencies than they have heretofore received. Nobody knows how long the war with Japan will last; but to incur the least possible risk of its conduct being hindered by shortage of transportation, the government should immediately reduce or abolish all restrictions on acquisition of equipment and materials by American railways.

For our government to continue sending abroad large amounts of railway equipment and materials to aid in the *post-war* rehabilitation of other countries, and to continue restricting the equipment, materials and man-power that our own railways can get to aid in carrying on the war with Japan, would be a crime for which no rational defense could be offered.

The Railways Need a Program

The railways should take advantage of the interval between V-E day and V-J day to formulate a broad post-war program and begin carrying it out. The program should include (a) what they are going to do to put their properties in condition to render good post-war service as economically as practicable, and (b) what they are going to do in an effort to secure a frame-work of government policy within which they can conduct their business with reasonable profit.

It will soon be possible to measure approximately the effects on production and traffic of cessation of the war in Europe and continuance of the war with Japan. Intensification of the drive against Japan will present the railways, especially the western lines, with new difficulties. On the other hand, it is estimated that total production for war will soon be reduced about one-third. To what extent production for civilian purposes will meantime be increased is speculative. It will depend largely upon government policies.

A huge consumer purchasing power has been accumulated; but it has been largely invested in government bonds. The government can hardly encourage people to sell these bonds in order to increase buying of consumer goods while it is still trying to sell them large additional amounts of bonds. But undoubtedly there will be a large increase in buying of civilian goods by both consumers and business if government relaxes or removes restrictions on what can be bought enough to make this possible. And government will hardly continue to so enforce war-time restrictions as to make it impossible to employ in production for civilian purposes man-power released from production for war purposes. Total freight traffic probably will decline; but its early prospective decline does not seem seriously to threaten railway earnings.

Meantime, the earliest beginning of rehabilitation of the railways that available man-power and materials may make practicable seems imperative. Large replacements of old freight and passenger equipment, and of rail and other parts of the permanent structures, as well as extensive improvements, will be necessary to enable the railways to meet the competition of other carriers which is now comparatively unimportant but which in the post-war period will become very important. The needed rehabilitation and improvements, in addition to bettering service, will effect economies in operation of vital importance. Without the program of rehabilitation and improvements that the railways joined in adopting and carrying out in 1923 and immediately subsequent years, they could not possibly have come through the 20's, the depression and World War II as well as they have. They should show equal foresight, initiative and courage now.

The industry is confronted with numerous current or proposed government policies which could do it harm or good. Proposed large government expenditures to increase competition with it should be opposed to the utmost unless public and government can be convinced that, in the public interest, those using airports, highways and waterways should be required to pay adequate tolls for their use. Legislation should be advocated to so change the anti-trust act that the railways can not be persecuted and prosecuted for doing what is plainly necessary to give effect to the purposes of the Interstate Commerce Act. There have been huge increases in railway costs, especially wages and taxes, during the war; and no united effort that the industry can make should be spared to prevent further increases in operating costs and to secure reductions of taxes.

The railways need to adopt, for large expenditures on the rehabilitation and improvement of their properties, and for government policies that will help the industry do its share in promoting the public welfare, a broad program that they can present to the public with confidence that it deserves public support.

Rolling Stock And "Redeployment"

No small part of the capacity of American railroads to handle the tremendous war load imposed upon them has been the remarkable extent to which it has been possible to step up the utilization of motive power and rolling stock. Indeed, it now appears that no greater load is likely to be imposed upon motive power than that to which it has already been subjected. Changes in the traffic pattern which will develop as the "redeployment" toward the Orient of the military and industrial forces of the nation gets under way may produce acute local situations but, on the whole, motive power and road capacity are believed to be not too far out of balance.

If the same statement could be made with respect to freight cars, the outlook for the remainder of 1945 would be much nearer the rosy side than it is. The most recent estimate of the cumulative shortage of new freight cars to replace retirements which should have been made since 1941 is that of Col. J. Monroe Johnson, who places the figure at 185,000. Had the railroads received this many more new cars during 1942, 1943, and 1944 than they were actually able to secure, the average condition of the freight-car inventory would have been at a considerably higher level than is now the case.

It is difficult to find any statistical basis by which to judge the condition of freight cars at the present time. During peace-time when freight-car utilization and repair practices were on a normal basis, the percentage of cars in bad order—that is, in shops or awaiting repairs—was a fairly good index of the varying physical condition of equipment from time to time.

Now, the continued phenomenally low percentages of bad-order cars merely mean that most of the cars which would normally be considered bad order are still in service because they cannot be spared long enough for extensive repairs if, indeed, labor were available with which to make such repairs.

As we face the realinement of traffic flow, two unfavorable conditions must be considered. First is the progressive increase in the extent of car shortages—particularly those of box cars—which has been taking place since the first scattering shortages began to be

reported in the spring, and then again in the fall, of 1943. Last year the maximum shortage was less than 8,000 and shortages were below 1,000 during the three months of spring and early summer. Except for the first two weeks of the current year, shortages have been over 10,000 continuously and a maximum of over 19,000 was reached during the first four months. Will this situation be made more acute by longer hauls?

The second condition arises from the fact that with heavier loaded movement toward the west, car-repair facilities which are much farther apart on the western roads than in the east may find it difficult to deal with an added movement of progressively deteriorating equipment.

Looking ahead to the post-war period, the prospects for changes in the character of motive power and rolling stock alike are large. The effect of competition between steam and Diesel-electric motive power both for freight and passenger road service is reflected in many schemes for improving the characteristics of the steam locomotive. Some of these involve wide departures from the conventional type. The gas turbine will undoubtedly also seek a place in this picture at an early date. Whatever type of motive power the railroads choose to buy, the need for replacement of the present inventory will be large.

Not having been able to secure adequate supplies of new freight cars—most of which would not have been all that could be desired because of the limitations on the selection of materials—the railroads, when the time comes to replace the unusually large number of obsolete cars with which they are now burdened, will be in an excellent position to take advantage of the technological developments that have been accumulating during the war.

The Battle of Cars

There will be no V-day in the battle of freight cars until the heavy war-time traffic subsides. Despite the importunities of the O. D. T., the W. P. B. could not see its way clear to granting priorities for the building of as many cars as are desperately needed by the railways. Possibly the W. P. B. has been misled into a false sense of security by the fact that, with few exceptions, all car demands in 1944 were being met with reasonable promptness. Those who had been following freight car trends knew that the margin of safety had dwindled to a precarious degree and saw the danger, as reflected in the fact that for the first time in many years car shortages began week after week to exceed car surpluses.

The narrowness of this safety margin was abruptly brought to everyone's attention in the early weeks of 1945, when the weather disrupted railway operations in the Northeast. The dislocation of the normal flow of cars which resulted was immediate and violent and embargoes were necessary. That the freight car situation is precarious was confirmed further by the length of time it has taken to remedy this car dislocation even after good weather set in.

At present a closer approach to normality has been restored. For example, empty box cars are flowing to the wheat loading territory in numbers that would have been thought impossible only a few weeks ago. Even so, the handling of the wheat crop will strain the railways' supply of box cars to the utmost and, according to the experts of the U. S. Department of Agriculture, all grains as well as soy beans will show a bumper yield this year, so that there is little prospect of any alleviation of the critical car situation until winter—and then weather conditions must again be reckoned with.

The shippers of the country have done a splendid job in cooperating with the railways in their task of handling war-time transportation, and the time has not yet come when this assistance can be relaxed. That some may be allowing complacency regarding the transportation situation to affect them is suggested by the figures of average revenue tons loaded per car, which showed a steady increase from the beginning of the war until the news from Europe became so favorable last autumn.

Since then there have been small but persistent declines which, in the aggregate, reflect a material decrease in the intensity of car utilization. If war-time transportation is to be maintained at the high level of previous years, the shippers must continue their complete and unreserved cooperation.

Toward Improvement In Fixed Properties

With the end of the present war the conditions surrounding the transportation industry will be widely different from those of war-time and probably considerably different also from those of the pre-war period. At present, the shape of things to come is in large degree still a matter of conjecture, but one conclusion is certain—no agency of transportation can permit itself the luxury of remaining static in the character of the service it is capable of performing.

For the railroads, the chances of maintaining themselves in a position of supremacy will be proportionate to the extent to which they prove capable of changing their activities in accordance with the demands of the times. Since the character and cost of the service that the roads are able to render at any given time are determined to an important extent by the degree of adequacy of the fixed properties, they must be especially alert to the need for undertaking such changes in these properties as may be found necessary and practicable for removing limitations on service and reducing costs.

Railroad engineering officers have begun to come to grips with the problems of rehabilitating and modernizing the properties under their jurisdiction. In fact, final plans for many individual improvements have been drawn and are ready for execution just as soon as conditions will permit. In a broad sense the thinking that has been done in the direction of modernizing the properties as a whole is still largely of a preliminary nature, but it has been enough to convince these officers that it is not a smooth, unobstructed path that lies before them. Many important decisions will have to

be made and many difficulties will be encountered in carrying them out.

The character of the questions that will arise in this respect is typified by a problem that is now confronting one of the larger companies. On this road the conviction has grown that, if it is to compete successfully in the future between the two most important cities served, the line between them must be largely reconstructed at a cost of many millions of dollars. Will an expenditure of this magnitude be justified? If not, are modifications possible that will reduce the cost but still permit substantial improvements in service to be realized? Or should an attempt be made to compete for business with the present facilities?

Those whose responsibility it is to provide the answers to these questions, and to similar ones regarding all kinds of proposed improvements on this and other roads, may be said to hold a substantial part of the railroads' future in their hands. Assurance that the right answers will be forthcoming can be had only through a keen realization of the new situation confronting the railroads, and through the exercise of a high order of judgment, unhampered by ultra-conservatism or out-worn precedent.

V-E Day Brings Hope for Railway Materials

After sharp W. P. B. cutbacks of second quarter railway materials trimmed allocations to 70 per cent of first quarter allowances, when O. D. T. Director Johnson revealed that W. P. B. slashes thus far have involved sufficient materials to build 187,000 additional freight cars, comes the welcome announcement by the Steel Industry Advisory Committee that present steel mill capacity is sufficient to meet all requirements for the war against Japan and at the same time provide all necessary steel for war-supporting civilian activities and for reconversion. The promise of this relief comes at a time when critical shortages of rail, track fastenings and accessories are matters of grave concern and rolling stock long has been wearing out faster than it has been replaced.

Although the extent of increased allocations following the defeat of Germany has not been disclosed at this writing, it seems certain that definite provisions soon will be made to increase the availability of badly needed railway materials. Although the severe cutbacks of second quarter allotments later were eased somewhat, they have fallen far short of filling critical needs for rail and rolling stock because production during the last three years constantly has fallen short of minimum programs and only about 70 per cent of the planned production has been finished.

The critical situation with regard to the production of crossties and lumber presents added difficulties principally because more intricate problems are involved, rather than a mere conversion from war to peace-time requirements, which in the case of rails, track fastenings and accessories can be effected with minor rearrangements. Crosstie production is in the doldrums and inventories are dangerously low, primarily because of inadequate ceiling prices and discriminatory O. P. A. regulations which favor the production of lumber instead. Crosstie production during the first quarter amounted to approximately 66 per cent of the total number of crossties produced during the same period of 1944 and 58 per cent of the 1943 production for the same period.

Gross lumber stocks at the mills and concentration yards totaled approximately 3,429,000,000 board feet at the end of February compared with 10,012,000,000 board feet at the beginning of 1941. Thus the downward trend in lumber stocks continues with the quantity on hand approximating 34 per cent of the total lumber stocks available at the beginning of 1941. It has been due largely to the working of Order L-335 that the railways have been furnished with an equitable proportion of timber and lumber of the grades and species that they require. At present boards and smaller sizes are extremely tight and dimensions and timbers are available in slightly larger quantities. Immediate prospects for any increase are poor because military estimates indicate prolonged needs for huge quantities of lumber in the Japanese war. Lumber production under present conditions has a profound detrimental effect upon the production of crossties, and unless relief measures soon are adopted there is little prospect of any early improvement.

If matters are allowed to drift, it is a foregone conclusion that the downward trend will continue, possibly to the embarrassment of track maintenance in 1946 and 1947.

Signals Keep Trains Moving

From the standpoint of the shipper, modern railroad signaling serves two important purposes: to prevent damage to lading that may be caused by train accidents, and to reduce the overall time of trains between termini by minimizing the time which otherwise would be wasted when cars are waiting in yards or when trains are waiting on sidings. As considered by the managements of the railroads, modern signaling is thus a means for improving service to the shippers, and also is a means for increasing the capacity of existing tracks, as well as the utilization of locomotives and cars.

The benefits that can be accomplished by proposed signaling installations can be measured beforehand in terms of hours and minutes, as well as in dollars and cents, and, therefore, a railroad is not buying a "pig in a poke" when it installs a modern signaling system.

Furthermore, the signaling can be "tailormade" to fit the requirements as to type of traffic, number of trains, and physical characteristics of the line with reference to grades and curvature. These are some of the reasons that, during the war, the War Production Board allotted materials for new signaling as an essential factor in expediting the movement of war-time traffic. Similarly, after the war closes, signaling will continue to be installed extensively, as one of the important means for expediting the shippers' freight, as well as getting more service from tracks, locomotives and cars.

Mr. Shipper, You're the Doctor!

SAWDUST may be substituted for oats in old Dobbin's diet, at a considerable reduction in the feed bill. The railroads have been working on this menu for fifteen years—during the '30's from lack of earnings with which to provide more substantial victuals, and since the war began from a parsimonious allotment of materials and labor—yet only, during the past year, at length, has the old steed staggered perceptibly under his ever-growing burden.



Hard Work on Skimpy Rations

The wonder isn't that, at last, the long lack of calories in the railroads' diet has begun to cause them to stumble a little now and then, but that they managed to hold up so long and so well with such unsubstantial fare. How they did so is a secret shared by the shipping fraternity, though by few of the lay public. It has been a matter of feeding the skimpy food in a skillful manner, and of trimming the lading on the critter so as to minimize its painful effects.

Taking leave of the barnyard analogy, here is what happened: When the war began the railroads had less transportation plant than they had in 1929, but they had elaborated with the users of their service—private as well as governmental—a cooperative plan of great promise for utilizing available plant to the maximum. They went into the war period, therefore, with considerable confidence in their ability to do the job to be given them, but without a realization that the actual load was going to be as large as, in fact, it turned out to be. When they saw that the transportation burden was going to be much bigger than they (or anybody else for that matter) had calculated, they sought authority from governmental agencies to acquire proportionately more materials, more equipment, and more working forces, but the federal officials adopted a "wait and see" attitude. When, in spite of miniscule cooperation from these authorities, the carriers continued to pull more service out of the magician's hat of their customer-cooperation program, the allocation officers not wisely but understandably fell into the habit of assuming that there was scarcely any limit to what the railroads could produce on starvation rations; so they continued to keep the carriers on a skimpy diet of materials, equipment and labor, and this feeding formula has not yet been enriched.

Allocators Continue Optimistic

Well—experience during the past year has demonstrated to everybody but the allocators of men and materials that cooperative effort and managerial expedients have attained and passed their apogee. Both freight and passenger traffic performance have been bumping along against "ceilings" beyond which they refuse to rise—and not because traffic seeking to move has been lacking either, because, for almost a year, tonnage waiting to move has exceeded the current daily movement. This accumulation of traffic has not often during the year been of sufficient magnitude to arouse panicky apprehension, but it has at all times been large enough to occasion discomfort and misgivings as to the future—on the part of everybody in possession of the facts, except the allocation authorities, who are suffering from the highly complimentary but mistaken faith that nothing whatever can stump the railroads.

With transportation short, and demonstrably impossible of further supply merely by managerial expedients, along came, in the northeast, the worst winter in years—with a resultant dislocation of car supply which even yet has not been fully corrected.

In Congress, political tempers have been rising as the folks back home have entered their complaints at a quality of railroad service which, at times, has been a reminder of conditions a quarter century ago. And, as usual in such circumstances, politics seeks a personal and tangible scapegoat—rather than the more elusive, more complex, and more genuine causes. Politics doesn't search primarily for the correction of a bad general condition; it demands only that the complaints of its constituencies be appeased—if need be by the sacrifice of the legitimate interests of other localities, or perhaps even of those of the nation as a whole.

Army's Anomalous Behavior

Such is the critical situation of the railroads today—the nation's sole reliance for transportation service of sufficient magnitude to move the lethal stream of munitions which is pouring out of our factories to the places where it will be available to hurl at the Nipponese enemy; and the nation's principal reliance also for the transportation service necessary to keep the domestic economy in operation.

The Director of the Office of Defense Transportation, Colonel J. Monroe Johnson, has seen this situation with

perfect clarity all along. Again and again he has signalized the anomaly in the contrasting behavior of the military authorities toward domestic and enemy railroad transportation. Enemy railroads have been one of the principal targets of our bombing operations—but the military authorities have also acquiesced in a policy of skimping manpower and materials allocations to the domestic railroads which has had an effect on them, differing in degree but not in kind from a bomb attack at the hands of the enemy. In a sense, therefore, the top authorities directing the war program have subjected the domestic railroads to treatment not dissimilar to that which they have visited on the enemy's railroads.

Transportation Came Too Easy

A part of the Army—the transportation branch—knows transportation requirements and supply as intimately as do civilian shippers, but, seemingly, this branch has had the same difficulty that the transportation industry, the O.D.T., and the I.C.C. have had in getting transportation considered at the top levels of war planning in ratio to its relative importance. It is not hard to understand why it is so difficult for military people not close to transportation to realize the magnitude of the job—because domestic transportation has come so easy to them. The military have not had to prepare blueprints for domestic transportation service, and go with them to manufacturers with an urgent demand that they build a transportation service from the ground up, as they have had to do to get munitions, ships and planes. The importance and value of the hard-to-get is readily understood from experience while the equally necessary familiar service is too easily regarded as something that comes without anybody's effort, like air and sunshine.

The Shipper as Counsellor

One category of Americans, however, stands in a unique position to educate public policy toward transportation into greater realism—that is to the understanding that privately-owned transportation service needs supplies of capital, of materials, and of man-power, just as much as do the war-time and peace-time services which have their origin in government bureaus and government appropriations. The citizens upon whom devolves this all-important duty to serve as the public's mentor and interpreter of the little-understood conditions which make for transportation health or illness are those who make the purchase of transportation their full-time profession.

The common carrier transportation industry cannot make by itself most of the decisions regarding the pricing and quality of its service—such as other industries specify for themselves without the assistance or interference of their customers—because the transportation industry is a regulated industry. But who is chiefly and primarily responsible for the specific form that regulation takes, and for its wisdom or unwisdom, if not the buyers of transportation service?

The direct regulation, of course, is carried on by government officials—but the rules they enforce are, largely, those demanded of the legislative authorities by the users of transportation. Legislators aim to please—so the quality and adequacy of transportation, to the important degree to which these are dependent upon public policy, are mainly the resultant of the opinions and desires of those of the industry's customers who give political weight to their convictions. No single regulatory rule which is either helpful or harmful to the successful functioning of the common carrier transportation industry has achieved a place on the statute books except by its support at the hands of some politically articulate group of the industry's customers; and no such regulatory provision would stay on the statute books very long if predominant customer opinion opposed it.

There can be no question that the adequacy and efficiency of common carrier railroad service is adversely affected by the political framework in which it carries on. This applies both to the carriers' war-time status and to that of peace-time. The manufacturer who makes war materials has a traffic manager who can tell him exactly what the situation is with regard to the transportation of his raw materials and finished products. If the allocation authorities are dealing generously as to labor and man-power with this manufacturer but are skimping such supplies for the transport entering into this manufacture, would not the federal authorities most likely deal more liberally with the transport end of this productive process if the manufacturer were to advise them that his schedules threatened to be retarded, not by failure in production but by a failure in transportation?

Those who make a profession of purchasing transportation possess the natural, and indeed the only, authoritative voice which is in a position to command the attention of federal authorities to the need, in the producers' interest, of more adequate provision for the needs of the industry upon which producers must rely for the prompt movement of their products.

Pre-War Undernourishment

Railroad facilities are, however, falling short of adequacy, not only because of the failure to secure sufficient manpower and materials since the war began —but because of the pre-war lack of new investment in additions and improvements to railroad plant; and the failure for more than a decade of new investment in railroad improvements to attain a normal level arose from the unfavorable political climate in which the railroads labored. Specifically, tax-paying and interest-demanding private capital fought shy of the railroad industry because there were such large and unpredictable tax-free and interest-free "investments" of public money going into facilities for transportation by highway, by waterway, and by air.

Here again customers of the transportation industry "planned it that way." Such large outlays of government funds would not be made by politicians for any other reason than to cater to a political demand—and only the customers of the transportation industry would have a motive for calling for such expenditures. Quite possibly the preponderant opinion of the transportation industry's customers may not have positively approved appropriations on such a lavish and unpredictable scale—and with no proportionate contributions by direct beneficiaries—but such opinion did not actively disapprove these expenditures. If it had actively opposed such appropriations, the politicians would have lost more votes by making them than they would have gained thereby; and, under such circumstances, the appropriations would not have been made.

Shippers Get What They Demand

Articles in this issue outline the railroads' recent accomplishments in freight transportation; and what their plans and needs are for the future. The alert buyer of transportation will be able from such information to perceive where his own interests in satisfactory and economical service lie, and what changes in public policy are necessary if the railroads are to achieve the goals in facilities and service which are requisite to the protection of the customer's interests. Desirable modifications in public policy will suggest themselves to shippers with vision and understanding of their own long-term interests; and such shippers have it within their power to enjoy exactly the kind of transportation they most desire. If they will provide the healthy political surroundings in which a private-enterprise, common-carrier transportation industry can thrive, then they will unquestionably get from that industry the character of service and economy which they thus make possible.

The point is that the shipper does the prescribing—passively if not actively—for the regulatory and other political surroundings which determine the progress or penury of the common carrier railroads. The situation of these carriers today is primarily the product of shipper action or inaction in the past; and the situation and quality of service of the railroads tomorrow will closely follow the prescription which the shipping community writes for them now and in the early future. Mr. Shipper, you're the doctor; and the serviceability of the patient to you in the future is largely a matter for your own determination. Certainly his willingness to serve to the limit of his remarkable skill and endurance has been demonstrated—so the remaining means of getting more performance out of him lies in strengthening his sinews, which is your province.

The Shippers' Interest in Sound Transportation Policy

*By CHARLES W. BRADEN**

WE must recognize that a profound change has taken place in the attitude of a large majority of shippers in the matter of transportation policy. Thirty years or so ago, the attitude of shippers generally towards a sound national transportation policy would have been one of selfish indifference. Shippers have come now, however, to recognize there is such a thing as an interest above their own self or sectional interest, which is commonly called the public interest, and that their individual interests are coupled with the necessity for the formulation of a sound national transportation policy. Differing conditions, however, have caused two schools of thought among shippers as a whole. One of these may be called special interest, the other, the public interest school. The reason for this is that there is no industry which more intimately affects as many group interests as transportation. These two schools cannot permanently coexist. They must eventually work together for a soundly conceived program.

It may be said that associations of shippers, as such, should be interested in a genuinely sound national policy with respect to transportation, but the expression of their position on certain fundamental principles is disappointing or they have failed to show any realistic recognition of the fundamental issues. While one may be inclined to be critical of associations of shippers and allege that individual members or interests thereof apparently have determined their position on public questions concerning transportation in terms solely of the effect upon the industry to which they are attached, or to that of a particular section of the country, there is a marked change taking place in their consideration and a new and enlightened school of thought has arisen over the past several years. A number of shipper associations are undertaking the problem of determining what is a sound national transportation policy for the country as a whole and for the preservation of private enterprise in transportation. Some have partially made known their views, which are found to be constructive.

Many expressions have been made with respect to a national transportation policy. Advocates of broad social and economic planning have publicly made known their views which have tended to complicate the present task. They have been found to be in favor of an attempted treatment of transportation as an instrument for accomplishing experimental policies and for achieving social reform. These are a threat to private enterprise, and our American institutions and traditions. Shippers as a whole have openly declared their opposition to such an approach. They do recognize that our country has gone ahead in the past in the development of our transportation without much foresight or plan. Projects have been encouraged and promoted without thought of inter-relation or effect one on another. Mutuality of purpose and end, whether it be called cooperation or co-relation or coordination, has been conspicuous by its absence, and competition, while of value, has been honored beyond its deserts.

Coordinated Regulation

Shippers who have given serious thought to the subject consider that a national transportation policy must include all the great rival agencies of domestic transportation. The Interstate Commerce Commission has been given authority over all of them with the exception of air transportation, and with its relationship to them that of a regulator within the limitations of prescribed law, and not that of either supporter or opponent. These shippers feel that the record of the Interstate Commerce Commission in the past negatives the suggestion that it cannot deal with equal fairness with each agency of transport. The air lines were brought under federal regulation by the Civil Aeronautics Act of 1938, and are under the jurisdiction of the Civil Aeronautics Board.

This brought all domestic transportation agencies under federal regulation with the regulator of the older agencies being neither a supporter nor opponent, and with the regulator of the newer agency of transportation being inclined to go beyond that point and, in the belief of many, being a supporter. These shippers consider there is need for a coordination of governmental policy over transportation in the widest sense of the term, to the extent of national power over interstate commerce, and, therefore, that all forms of transportation should be entrusted to a single regulatory body with its relationship to all of the great rival agencies of transport to be that of regulator, and neither supporter nor opponent of any particular one. The shippers holding this view are supported by the thought which was held by the Federal Coordinator of Transportation in that direction.

While it is considered essential to have all competing forms of for-hire transportation entrusted to a single federal regulatory body, from the viewpoint of sound administration within the limitations of prescribed law, this is only one of a number of fundamentals entering into consideration of a sound transportation policy. In fact, the basic inequality of the past, resulting from failure to regulate all competitive agencies of transport, has since been remedied by the enactment of appropriate legislation.

How the Shipper Can Protect Himself

One of the most thoughtful of the nation's leaders among shippers issues here a timely warning to the buyers of transportation services—

That the shipper will lose his present controlling voice if the railroads become a government enterprise, and that the railroads will fall into government hands by default if private capital refuses any longer to finance them adequately.

Uneven and haphazard public policy toward the various agencies of transportation—and especially the large and unpredictable expenditure of public funds for the benefit of some of these agencies—has made hazardous and unattractive additional large investments of private money for fixed plant improvements in this business.

The author suggests that, in their own interest, shippers should support a uniform national policy of regulation and capital supply toward all agencies of transportation; adequate charges for the commercial use of publicly owned transport facilities; curtailment of the indiscriminate privilege of private transportation to the detriment of common carriers; requirement of certificates of convenience and necessity for public as well as private expenditures for additional transportation facilities.

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In brief, a sound national transportation policy should be one in which the transportation problem is treated as a single unified problem, including all agencies and all facilities of each agency. There should be less emphasis on restrictions and the prevention of abuses. The policy should announce that private ownership and operation of railroads shall be preserved and supported, and that all facilities of transportation must be on a common self-sustaining basis. It should proclaim a new spirit and attitude on the part of legislative bodies and regulatory authorities, and accord recognition to the fact that transportation is a business subject as other business is to the operation of economic laws and business cycles, and requires an appraisal of the changes which have come about to determine what modification of previous and present principles should be made in order to afford a new era with equality of opportunity and treatment of all agencies of transport alike.

The several declarations of Congressional policy in the various acts pertaining to common carriers conflict with one another. The declarations in some of the acts (especially the 1940 act) are indefinite as to meaning. All that has been done from year to year has been to patch legislation here and there, without first creating a framework of principles within which the common carrier services as a whole are to be conducted and regulated. We have been in an orgy of promoting one form of transport against another, either at the expense of the public treasury, the shipper or the investor. Manufacturers of transport equipment have pushed their products into the market regardless of public need.

In its practicable application the inherent weakness of the declaration of Congressional policy in the Transportation Act of 1940 is that it provides a guide for the Interstate Commerce Commission but without giving it any voice as to the convenience and necessity of proposed additions to the national transportation structure, particularly as to the expenditures of public funds in creation thereof and the requirement that these be on a self-sustained basis. The national transportation policy as thus declared in the Transportation Act of 1940 in this respect falls short of being a sound national transportation policy.

Right of Private Carriage

Many questions of direct interest to shippers enter into a broad consideration of a national transportation policy. One of the questions is the right of the shipper to carry his own goods in his own vehicles. With the power to operate vehicles over the highway, ships and barges on waterways, this privilege has the effect of giving the big shipper, so-called, an advantage over his smaller rival.

This raises the question as to whether the rule of equality is violated, and whether its just and wholesome purpose is fully accomplished in line with the historic position held by the Interstate Commerce Commission in its early days of administration of the Act to Regulate Commerce.

Commissioners Eastman and Splawn in several public addresses on transportation posed the question as to just how far should an individual shipper, not a common carrier, go in transporting his own goods? During one of the hearings on the legislation which brought forth the Transportation Act of 1940, when the question was put to Commissioner Eastman as to whether he thought it would be in the public interest to prohibit private transportation, he replied, "We thought it probably would, under certain circumstances, be legally practicable to control the right of individuals or industries to engage in transportation of their own property, provided you could establish the fact that such control was necessary for the protection of a proper system of common carriage for the public under private investment."

It is a question to be faced in determining a sound national transportation policy, and, in the view of shippers who have given serious thought to the matter, intra-industry competition among shippers in the post-war period will force an increase in the exercise of the right of private carriage of goods by the shipper. The shipper will want to retain the right, but the problem must eventually be faced, in the opinion of many students of transportation, as to how far the right may be exercised with due regard to the public interest and to the rights of transporters engaged as common carriers in the business of transportation as a means of livelihood.

A Transport Dept. Store

There are innumerable examples in the growing field of private transportation which give substance to views more and more widely expressed that coordinated transportation should be made available to the smaller industries and to the man in the street through the medium of a common carrier system. Many shippers hold the view that a national transportation policy should make it permissible for a carrier to perform a complete transportation service by rail, with such accessorial services as are necessary to give complete, efficient, low-cost transportation service in the best interest of the public; that it should be permissible for a carrier to make use of other facilities of transportation either by ownership or contractual arrangement, including railroad, motor bus, motor truck, vessel, barge and airplane as it deems desirable for it to render a complete transportation service to the public, and such accessorial service as will enable it to attract business to its line and within reasonable territorial limits.

These shippers hold that operators of different forms of transportation should be encouraged under proper safeguards in the public interest to adopt any advancements in means of transport which will tend to make more complete or economical their service to the public. A good case can be made for changes in the law to permit railroad companies to become transportation companies.

Private vs. Public Investment

Shippers are generally aware of the fact that inter-carrier competition for the volume of traffic of the period immediately previous to the present World War was so severe as to cause financial disturbance to many of the railroads and the same competitive influences which adversely affected the railroads had like effect on their competitors. The competition was largely created by the expenditure of public funds. There is much discussion among shippers of the prospect of increased post-war competition from other and newer forms of transport, by airway, highway and waterway, and it may be noted that in some aspects these other forms of transport are complementary to the railroad. There is a growing awareness on the part of a substantial number of shippers that airports, highways, dams, locks, channels and other waterway controls are built and largely maintained by public investment—which heavily weighs the scales in favor of other forms of transport against the railroads under private investment.

On this point the late Joseph B. Eastman in an address at Baltimore on April 23, 1941, entitled "The Transportation of Tomorrow" remarked as follows:

"One very important matter with relation to transportation competition is not within the Interstate Commerce Commission's control. A very large part of our transportation facilities are publicly owned. I refer to the highways, the inland waterways, port terminals, harbor improvements, airports, and other aids to both water and air transportation. To some extent the country is paying for its transportation through taxes rather than through rates and fares. That is a question of public policy, but clearly the country ought to know what all the facts are in this respect and to have in mind the possible consequences."

As the transportation revolution took place in the early history of our country, the reason which induced the American government to employ agents in the form of corporate organization by charter or authority to build and administer railroads and not to do so itself, was that government in America had proved itself competent to build and administer the ordinary highway, but when it came to administering a railroad, which is a roadway together with the mechanism of transportation thereon, popular government failed. Hence it is that the cause which induced private ownership and operation of our railroads was the difficulty of conducting the transportation business and not the difficulty of providing and holding the right of way. This is understood by many serious students of transportation and is based upon historical fact.

These students, so-called, also are aware of the fact that the corporate organizations built the railroads and paid therefor with bonds issued as the government might have issued bonds, and the interest thereon became a charge upon the earnings obtained for the transportation of goods and persons. Under our present law, no corporate organization may undertake the extension of its railroad or construct a new line of railroad without obtaining a certificate of present or future public convenience and necessity.

They realize that private capital cannot indefinitely be coerced to compete with tremendous federal and state expenditures; that inequitable treatment of railroads; unplanned, uncoordinated activities by independent government bureaus; uneconomical, irresponsible wastefulness of public funds in building up surplus, duplicating transportation facilities—all lacking a program of fair and impartial treatment—will in due time discourage private investment in our nation's transportation plant.

The present philosophy of our government embodies the objectionable practice of dollar-matching between federal and state governments, which always carries the temptation for local governments to spend more than they can afford. It is questionable whether such a provision can be combined with the need for additions to our country's transportation plant without a consideration of present and future public convenience and necessity. Unless some provision is eventually made that before Congress appropriates any money for projects for which a transportation value is claimed, it should have a finding from the Interstate Commerce Commission, or some appropriate like body, that the additional transportation facilities of the proposed type are necessary and that there is sufficient traffic to justify proceeding with the proposed project—the yearning of political office-holders to see federal money expended in their communities and to claim the credit for obtaining it will increase.

If the foregoing provision should be made effective, it would remove the element of unfair competition inherent in the present system of tremendous federal expenditures for transportation facilities without due regard to facilities already established and serving the public, particularly by private enterprise, and it would cause a careful scrutiny of particular transportation projects which are proposed from time to time to see if they would be self-supporting.

Certain associations of shippers have endorsed a "benefit" basis of cost allocation in transportation improvements. The expenditure of public funds on transportation affords to the user certain "benefits" made possible by public aid. Some shippers hold that a reasonable user charge should be paid in proportion to the benefit received by the user of such publicly created and owned transportation projects. Other shippers are opposed to such an approach.

Self-Liquidating Outlays

Recently a rather startling statement occurred at Washington as reported in the public press under March 13 date, which has been seemingly overlooked by editorial writers. Briefly, in the course of consideration of federal expenditures for airports, Senator Bailey, chairman of the Senate Commerce Committee, is reported to have remarked that he believed all federal development programs must be eventually moved from the class of general debt to amortized debt; that the size of the national debt must not be overlooked and that the beneficiaries of federal programs must begin to pay for them. The shippers who are in agreement with such a premise cannot be called "pro-railroad", but they are striving to promote understanding and action which will enable the railroads to continue to thrive moderately, as private enterprise, alongside agencies of transportation whose capital plant is created and largely supported from public funds. The imposition of so-called "user charges" upon the beneficiaries of such transportation projects would not, however, answer the question of the public convenience and necessity of a particular project. It would be a publicly created transportation facility whether charge was made against the direct beneficiaries or not. An informed and impartial finding upon its present and future public convenience and necessity would be the only fair test for the expenditure of public funds in its creation and maintenance.

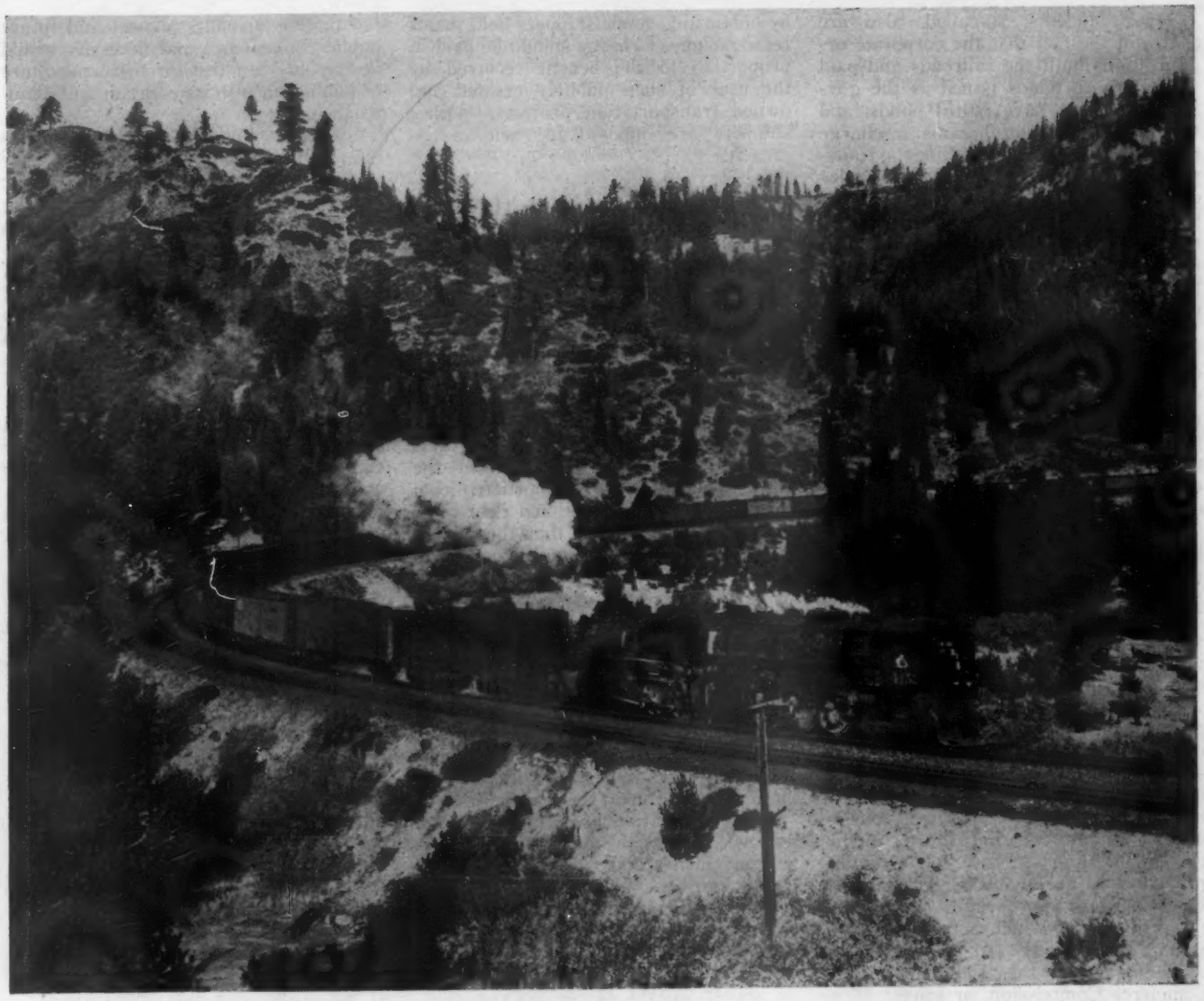
Shippers who have given serious thought to the matter are of the view that uncontrolled expenditure of public funds will eventually bring into being socialized transportation and compel in its wake the taking over of our railroads for government ownership and control. Government ownership would mean that the user of transportation would have to carry on in a changed relationship, with control gone completely out of his hands into those of the instrumentalities of government ownership.

The present war has been a good school of experience. It is generally recognized that, when we went into the war, we were woefully unprepared in a military sense because the country would not accept the possibility that our nation would be involved, and had consequently been unwilling to underwrite military preparation. Fortunately the railroads were prepared. Without detracting from the value of other forms of transportation, the experience has proven that in the past, and pre-eminently at the present time, the railroads are of the foremost importance both for national defense and our civilian economy. The majority of shippers believe that the railroads will continue to occupy that leading position and also aid in the relief of unemployment on a self-sustained basis.

Public policy as respects the industry is a question of working out a solution consistent with the spirit of private enterprise in our country.

Long-Run Economy May Not Be What Pa's After





Refrigerator Cars Were in Great Demand Throughout the Year

Railways Struggle with Heavy Burdens

Traffic increases level off in the past year, but the strain of emergency transportation continues unabated

THE story of railway freight traffic in the year since the publication of our previous Freight Progress Annual no longer recounts steeply rising volume. Rather, it has been a year of fighting to continue handling an overwhelming tonnage under the handicaps caused by a winter of unusual severity, man-power shortages, and inability to secure equipment and materials with which to do the job. Actually, the railways handled fewer revenue tons—3,029,226,000 as compared with 3,031,552,000—in 1944 than in 1943, but they hauled them farther, 243.5 miles per ton per railroad in 1944 as compared with 239.8 miles in 1943. The result was that the net ton-miles (revenue and non-revenue) handled increased from 772,425,000,000 in 1943 to 785,509,000,000 in 1944, thus creating an all-time record. The last two years are the only ones in railway history when totals of more than 700 billion net ton-miles a year have been piled up.

Efficiency was greater in that the increased traffic was handled with fewer freight train-miles (699,070,000 in 1944 and 701,479,000 in 1943) and fewer freight locomotive-miles, including light engine-mileage, (806,929,000 in 1944 and 813,494,000 in 1943). Net ton-miles per train-hour rose from 16,997 in 1943 to 17,621 in 1944; net tons per train from 1,116 to 1,138; and average cars per train from 52.1 to 53. Gross ton-miles per train-hour increased from 35,970 to 37,294, far greater in both cases than in any previous year.

All of these figures represent new records, but, unfortunately, there was an unfavorable statistical factor. Net tons per loaded car were 33.3 in 1943, the highest ever, but they declined to 32.7 tons in 1944, reflecting perhaps a complacency on the shippers' part as brought about by the favorable war news of the early fall. Whatever the cause, this decrease in loading had a pernicious effect upon the car supply, even though the railways took up some of the slack by increasing the miles per car per day from 48.5 in 1943 to 49.3 in 1944. This is the highest figure in history, and is

remarkable when it is considered that less than two decades ago it was thought to be an achievement when, after much striving, an average exceeding 30 miles per car per day was attained. The large mileage per car-day was accomplished in the face of the greatest traffic density in history, net ton-miles per mile of road per day having increased from 9,291 in 1943 to 9,441 in 1944. The highest figure in pre-war years was 5,683 in 1926.

Thus, on the surface, it appeared that the railways could continue to handle the burden of war-time transportation indefinitely in as satisfactory manner as previously. Students of the situation were not so complacent, however. The figures as to freight car shortages were beginning to show an alarming trend that could not be overlooked. And the severe winter weather in the Northeast in the early months of 1945 upset the delicate balance of car supply and caused dislocation of equipment so severe that conditions have not yet returned to normal.

Car Surpluses and Shortages

Meanwhile, in the first three months of this year, the revenue ton-miles of service performed by Class I railways were 4.1 per cent under 1944, although still 2.5 per cent greater than the corresponding period two years ago. In January, 1945, the figure was 56,845,-141,000 as against 60,487,997,000 in 1944, a decrease of 6 per cent. In February the drop was slightly greater, the figures being 55,300,000,000 as against 59,307,320,000, a 6.8 per cent drop. That much of this was caused by the embargoes because of bad weather is indicated by the estimated figure for March, 1945, of 62,900,000,000, which would represent a 0.4 per cent increase over the actual 1944 figure.

The freight cars owned by the United States railways amounted to 1,777,099 at the end of 1944, as compared with 1,766,955 at the beginning of the year. This gain of over 10,000 cars looked healthy, but the total ownership was still far below what it had been in 1930 at the beginning of the depression, when the figure was 2,289,755. Even though the average number of unserviceable cars in 1944 represented only 2.5 per cent of the total, as compared with 6.2 per cent in 1930, there was left a large gap in car ownership at a time when traffic had increased tremendously and cars were in great demand.

A study of car surpluses and shortages reveals what was occurring. In considering these figures it should be remembered that the term "shortage" merely means a temporary tightness of supply in one or more parts of the country and does not necessarily reflect a serious situation until the total "shortage" figure begins to equal or exceed the total "surplus" figure.

Until March, 1943, no car shortages of any importance had been reported for many years. In that month, relatively negligible shortages began to appear simultaneously in box, flat, gondola and hopper cars and continued for six weeks.

Then, during the week ending July 31, 1943, a shortage of nearly 1,000 box cars developed and shortages of over 1,000 box cars were shown in every week but one until the end of the year, reaching a high of 4,953 in the week ending November 6.

The year 1944 started with a shortage of 3,677 box cars in the first week and this climbed to 7,761 in the week ending February 5. The shortages then dropped steadily, being less than 100 cars in the week ending April 22. Beginning on July 1, however, the shortages rose to over 2,000 cars and remained above that figure for the rest of the year, except for one week in December. For the first time in more than two decades, the shortage exceeded the surplus in the week ending January 15 and this tight situation continued until March 11. On August 12, this situation again appeared and continued, except for three weeks, until the end of the year, the most critical periods being the week ending October 1, when box car shortages amounted to 6,809 as against surpluses of 1,962, a spread of 4,847 cars, and the following week when shortages amounted to 7,278 against surpluses of 3,072, a spread of 4,206 cars.

As to open-top equipment, shortages of flat cars were reported every week in the year, and these exceeded the surpluses in 15 weeks. The largest shortage was 301 cars in the week of October 7, when surpluses of 85 were reported. Relatively small shortages of gondolas were shown in all but five weeks of the year and of hoppers in 31 of the 52 weeks, but in neither case did these figures anywhere nearly approach the reported surpluses.

This year, the box car shortages started off with the relatively high figure of 4,452 and kept right on going up, reaching 17,740 cars during the week of March 24, when the spread was 15,396 as against the surplus figure of 2,344. The end of the cold weather and heavy snowfall brought about some improvement but the dislocation was so prolonged and it is so difficult to restore normal conditions after such an emergency, that the car situation remains measurably worse than it was last year.

Shippers Given the Facts

Neither the railways nor the other agencies charged with maintaining efficient transportation were twiddling their thumbs while all this was going on. At first, as is indicated by the drop in figures of net tons loaded per car, it is apparent that the shippers did not realize the seriousness of the situation. However, the National Association of Shippers Advisory Boards called an emergency meeting on April 17 and the various regional boards, as well as the National Industrial Traffic League, did everything possible to acquaint their shipper members with the facts.

The manner in which the railways, in conjunction with the Car Service division of the A. A. R., the Office of Defense Transportation and the Interstate Commerce Commission, co-operated to meet the serious problems of the winter is described in another article in this issue. In addition, the railways and the other organizations have conducted a continuing campaign toward keeping the situation under control. The contrast between the co-operation of the present and the confusion and chaos that characterized transportation in World War I is very marked.

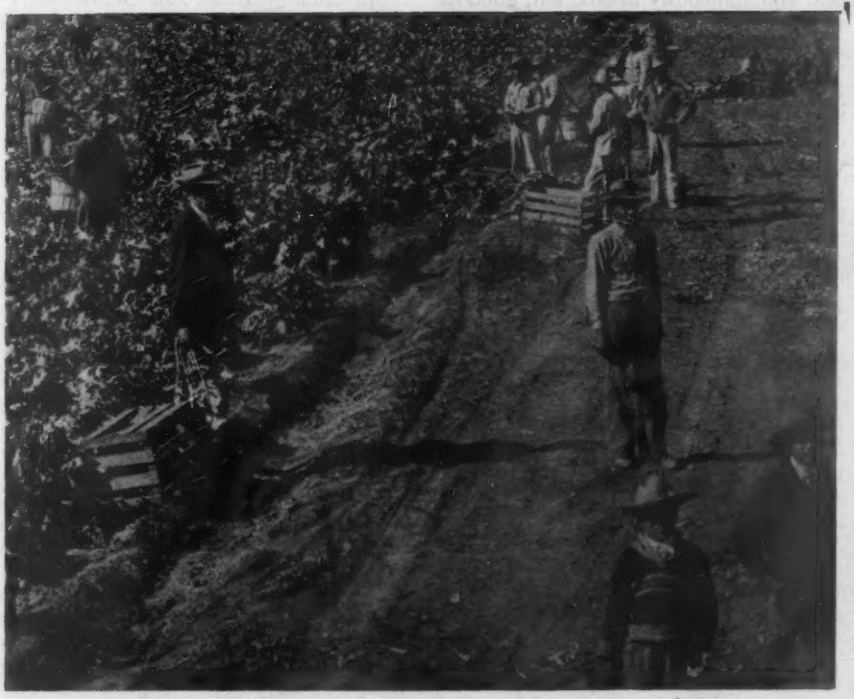
The Box Car Situation

In the past year, the box car supply has not been fully adequate, particularly as to high-grade cars, except in the New England territory and the Pacific Coast area. Emergency measures were taken by the Car Service division to allocate the available supply of box cars to the areas where they were most needed. The situation in New England and in California is different from that in other sections of the country since the railroads in these two areas are releasing more box cars than are needed to take care of current daily loadings. These surplus box cars were moved promptly out of these areas and, on orders of the Car Service division, directed to other railroads to assist them in meeting their requirements.

During the early part of 1944 there was an abnormally heavy movement of grain for that particular period of the year. The car loadings of grain and grain products during the first 13 weeks of 1944 were 5 per cent above the corresponding period of 1943, and 29.6 per cent above those in 1942. Corn loadings alone during the early weeks in 1944 averaged approximately 2¾ million bushels daily compared with slightly less than a million bushels per day during the late months of 1943.

Concurrently with the heavy movement of grain and grain products there were heavy demands for box cars to load munitions, war materiel and foodstuffs for our armed forces. Furthermore, during the early part of 1944, the United States roads, at the request of the O. D. T., were called on to deliver to Canadian roads empty grain box cars for return loading of government-owned feed grain. During the period this was in effect, January 10 to May 15, a total of 25,500 empty box cars were delivered to Canadian roads for this return movement.

Early reports released by the Department of Agriculture indicated the estimated production of grain for 1944 to be considerably in excess of the previous year's actual crop yield, and the Car Service division set up the usual quota plan, whereby eastern and southern roads deliver to western lines empty box cars in advance of the harvest. Because of the heavy demands for box cars for all types of loading, it was not practicable to supply the principal western grain loading roads with the usual 25,000 to 30,000 box cars in advance of



Bumper Crops Caused a Record Movement of Agricultural Products

harvest. Notwithstanding these heavy demands for box cars, the western roads were able to condition and assemble prior to harvest approximately 14,000 empty box cars at country loading stations from the supply delivered by the eastern and southern roads. The prolonged rainy season throughout the Southwest did not permit the actual harvesting of the winter wheat crop to get under way until about two weeks later than usual. Because of extremely favorable weather conditions in the eastern states—Ohio, Illinois and Indiana—the harvest was considerably advanced, bringing on the two movements simultaneously, which added further difficulty in meeting the box car requirements in both areas. Because of these conditions and other heavy demands for box cars, it was not possible to make the usual transfer of empty box cars from the Southwest to the Northwest in advance of actual harvest, so as to give the roads serving that area the customary advance supply of empty box cars. In order to provide the Northwest roads with the best possible box car supply, the Car Service division quota orders in effect on eastern and southern railroads were revised upward on July 24.

According to reports by the U. S. Department of Agriculture covering actual crop production, all previous records of wheat, corn, rice and grain sorghums production were shattered during 1944. There was near-record production also of other principal agricultural crops, oats, barley, flax seed, soy beans, broom corn, tobacco and cotton showing yields ranging from five per cent to 70 per cent above the average for the previous 10 years.

There was, at the beginning of the 1944 season, ample storage space to accommodate the record wheat crop, although during the harvest season there were a number of country grain elevators blocked, but this condition was not entirely due to deficiency in box car supply, but rather to a combination of labor supply and freight cars. The car supply as furnished in the Southwest territory measured up pretty evenly with the ability of receivers to unload their cars currently as measured by the available labor supply. It was necessary to invoke the provisions of I. C. C. Service Order 80 setting up the grain permit committees at the principal terminal and interior markets so as to regulate the flow from the country to the terminal and sub-terminal elevators to avoid congestion and delay to box cars.

Automobile Cars

In addition to the aforementioned box car usage, it was necessary simultaneously to furnish empty box cars at the ports to take care of inbound cargoes of raw sugar, coffee, cork, etc., and several cargoes of Argentine barley, the latter approximating close to 5,000 cars.

The net ownership of box cars during the year 1944 increased only 638, and this notwithstanding the addition of 15,329 new box cars. The percentage of bad order cars awaiting repair continued at a low figure and all lines are progressing their car conditioning programs to the greatest extent possible and measured by their ability to procure materials and to supply the needed labor for making repairs.

The demand for automobile cars for the loading of military motor vehicles, airplane parts, etc., continues exceedingly heavy. Because of changing conditions in the several war areas, the average loaded haul on this type of traffic has increased considerably because of much heavier trend to the West Coast. Therefore, the turn-around time on this type of equipment has been increased considerably and this has contributed in no small degree to the tight situation in connection with the available supply of this equipment.

Situation Better As of May 1

Until December 31, 1944, the eastern roads had been averaging 550 box cars per day returned empty through the various gateways to the western lines although because of severe winter weather starting in early December the number was steadily dwindling. As winter conditions grew worse the Car Service division of the A. A. R. arranged for the movement of empty box cars out of New England to New York area in solid train lots using every available open route to the West, particularly such routes as would by-pass the busy terminals and congested areas. These trains of empty box cars were moved under orders that did not permit their being switched out loaded locally until they had reached the western junctions, although it became necessary for the Car Service division to authorize the diversion of several hundred of such cars to protect the loading of munitions in the East which the armed forces required on short notice. Such routes as the N. Y. N. H. & H.—L. & N. E.—C. N. J.—Reading—W. M.—P. & W. V.—W. & L. E.—N. Y. C. & St. L. or N. Y. N. H. & H.—L. & H. R.—C. N. J.—Reading—W. M.—N. & W.—Southern or B. & M.—C. N.—G. T. W. and Potomac yard—C. & O.—L. & N. were used during the storm period to get additional box cars to the western roads.

Effective February 19, in view of improved operating conditions, the Car Service division ordered the delivery of 1,025 empty box cars per day to western railways at Chicago and 400 empty box cars per day at six other junctions. On these quota orders the eastern and southern roads delivered to their western connections from February 19 to April 13, inclusive, 68,332 empty box cars, an average of 1,265 cars per day. Effective April 14 the quota orders were increased to 1,990 cars per day and from April 14 to 27, inclusive, 29,881 cars, an average of 2,134 per day, were delivered, or 144 cars per day more than the order required. Thus between February 19 and April 23 the western roads received 87,741 empty box cars, an average of 1,371 cars per day.

Open Top Cars in Demand

The increase in box car receipts by western roads was reflected in an increase in both the carloadings of grain and grain products and in a reduction in the number of closed country grain elevators, of which there were 2,297 blocked on February 28 when the worst conditions existed. On May 2 this figure had been reduced to 857 blocked country elevators and prospects were

that this better condition would continue to improve.

The transportation requirements continue to run heavily to open top equipment. The all-time record production of bituminous coal, the rising volume of finished war material, together with the heavy movements of iron ore, iron and steel products, military impedimenta, and continued long hauls, all serve to place a great strain on the available gondolas, hoppers, and flat cars.

The accompanying tabulations are indicative of the job which the open top equipment was called upon to perform, comparing 1944 accomplishments with those for the years 1938 and 1943.

Many new movements of coal and other commodities involving long hauls continued to develop during 1944, requiring open top cars. The demands for this type equipment were continuously heavy in all sections of the United States. Further, substantial assistance was given the two principal Canadian roads to enable them to meet increased obligations. The present outlook indicates no slackening in the demand for all types of open top cars and there will be no general surplus of these types of equipment. Flat cars will likewise be in heavy demand, with spotty deficiencies possibly, in some of the larger originating areas. The objective of the Car Service division has been to protect the demands for open top cars (gondolas, hoppers, and flats) on all roads in all sections of the country. To do this, it has been necessary in some instances to use cars regardless of individual ownership, in order to meet the tremendous requirements, many of which were on short notice with deadline dates for arrival at ports.

Supply of Gondola and Hopper Cars

	Sept. 1, 1944	Sept. 1, 1943	% Change 1944	Sept. 1, 1938	% Change 1944
Ownership	861,732	843,096	2.2 Incr.	800,212	7.6 Incr.
Bad Order	25,279	24,553	2.9 Incr.	136,547	81.4 Decr.
Serviceable	836,453	818,543	2.18 Incr.	663,665	25.7 Incr.
Average Tons Capy.	56.56	56.43		55.65	

Revenue Carloads of Commodities Moving Principally in Open Top Cars

Commodity	Year 1944	Year 1943	Compared With 1943	Year 1938	Compared With 1944
Coal	8,937,856	8,507,036	430,820 Incr.	5,540,739	3,397,117 Incr.
Coke	750,825	751,687	862 Decr.	274,639	476,186 Incr.
Ore	2,648,892	2,815,572	166,680 Decr.	845,965	1,802,927 Incr.
Misc.	7,998,116	7,830,160	167,956 Incr.	4,810,312	3,187,804 Incr.
Total	20,335,689	19,904,455	431,234 Incr.	11,471,655	8,864,034 Incr.

Miscellaneous loadings include iron, steel, sand, gravel, stone, finished war armament, military impedimenta, etc., without which the conduct of the war would be impossible. They also include various types of agricultural machines used in planting and harvesting the crops, upon which our food economy depends. Flat cars are in especially heavy demand for these miscellaneous items of loading.

The two-ocean war front and the movement by rail of many commodities generally handled by water or rail and water, serves to lengthen the haul, with a consequent effect on the car supply by reason of the longer turn around of equipment. The co-operation of shippers in the maximum loading of coal and ore was of outstanding importance in aiding the carriers to meet the heavy requirements for this traffic, as indicated by the following tabulation:

Average Tons Per Carload

	Year 1944	Year 1943	Year 1938
A Coal	57.3	56.4	51.5
B Coal	60.4	56.6	54.1
Coke	36.0	36.2	35.0
Ore	61.5	60.8	60.4
All Carload Traffic	40.54	41.0	35.8

In connection with the 1944 all-time record in the production of bituminous coal, 620 million tons compared with the previous peak record of 589 million tons in 1943, there were new records established in the total dumpings of coal over the Lower Lake Erie docks, and in the movement of coal to the six New England states, as indicated below:

	Year 1944 (Short Tons)	Year 1943 (Short Tons)	Year 1941
Over Lake Erie Docks:	55,491,459	47,454,742	51,160,000
To New England:			
Via Hampton Roads	10,009,889	6,999,576	12,960,451
Via New York Dist. Piers	4,002,906	5,625,000	468,047
Via All Rail	9,857,815	10,521,060	7,035,985
Total New England:	23,870,610	23,145,636	20,464,483

Heavy Capacity Units

In connection with the mechanized war program, there is a heavy production of materiel requiring cars in excess of the normal carrying capacity to transport these several items. The Office of Defense Transportation early in 1943 was very apprehensive that the supply of heavy capacity flats (plain, depressed, or well type) of more than 151,000-lb. capacity, would be insufficient to meet the demands. The ownership of these types of equipment is less than 500 cars; in fact after taking out about 60 which the Navy has under lease, the ownership of these cars approximates only 400 units, and by a limited number of railroads. For example, only four of the western roads are included in this ownership and only one southeastern road. Early in 1943 the Car Service division set up a method of control for this small number of cars, and under this system it has been possible to intercept and divert these heavy capacity units, with the concurrence of the owners, to the extent that every requirement has been satisfactorily met throughout the entire country. Many of these cars are loaded with machines, turbines, or other material which requires circuitous handling because of clearances of certain tunnels or bridges.

Refrigerator Cars

There was a heavy increase in refrigerator car loadings during 1944 and the heavy loading has carried over into 1945. With the large acreage in sight for food crops there will be a continuing stringency in the refrigerator car supply during the present year.

There were no serious shortages of refrigerator cars in any of the producing areas last year, although there were some tight situations for short durations caused by high water and floods during the spring and severe weather and snow storms during the latter part of the year. Severe shortages were averted by faster turn-around of cars, heavier loading and decrease in empty car-miles due to common use of refrigerator cars regardless of ownership.

The progressive increase in refrigerator car loadings since the start of the war has been accomplished despite the decrease in refrigerator car ownership. The following tabulation is indicative of the job the refrigerator car has been doing during the war emergency:

Year	Refrigerator Car Loadings	Refrigerator Car Ownership as of January 1
1941	1,663,490	142,169
1942	1,865,014	143,078
1943	1,889,993	141,877
1944	2,209,071	140,195

The refrigerator car ownership as of January 1, 1945, was 137,818, a decrease of 3.1 per cent compared with January 1, 1941. Refrigerator car loadings increased 32.8 per cent in 1944 compared with the year 1941. Average tons per refrigerator car loaded in 1941 were 17.3, compared with 22.02 tons in 1943, an increase of 27.3 per cent. The percentage of empty refrigerator car-mileage to the total was 38.1 per cent for the year 1943 compared with 35.4 per cent for the year 1944.

Estimates indicate that refrigerator car loadings for 1945 will be at about the same level as 1944. Loadings will be heavy throughout the year and it is reasonable to assume there will be stringencies but on the whole the refrigerator car situation appears satisfactory.

There has been a continuing increase in the use of refrigerator cars for westbound loading. Prior to the present emergency practically all refrigerator cars moved west empty. For the year 1942 there were 34,645 refrigerator cars moved to Arizona and California loaded. In 1943 there were 92,082 cars loaded to these states, and in 1944 the total was 136,902, an increase of 102,257 cars compared with 1942. The decision to permit the substitution of refrigerator cars for box cars in westbound movement was taken in order to increase the use of refrigerator cars, which normally move empty, and which in turn saves

the haul of empty box cars from the West Coast to the East. This increased loading of refrigerator cars to the West Coast is the result of I. C. C. Order 104 issued January 25, 1943, to permit loading of refrigerator cars with box car freight and the co-operation of meat packers and others in loading of perishable products in standard refrigerator cars instead of special type cars requiring empty movement eastbound. The increased loading of standard refrigerator cars to the West Coast is a real saving in transportation and it also releases a large number of box cars for loading in other sections of the country where they are badly needed.

The Oil Movement

For the past three and a half years the railroads have been handling an unprecedented volume of oil in tank cars as part of their responsibility to provide adequate transportation in the war emergency program. In recent months the rail movement to the Atlantic Seaboard has averaged considerably below the record levels established at the peak of this movement during the summer of 1943, but this has been an offset to the substantially increased train-lot movements to the Pacific Coast and also in the interior of the country. Demands for tank cars to move petroleum and petroleum products are still very heavy and will doubtless so continue.

Of approximately 150,000 tank cars in service, there has been a standing average of about 115,000 allocated to the oil movement. During the heaviest period of East Coast loading, nearly 75,000 of these cars were in eastern service but at the present time somewhat over 52,000 cars are being used for shipments to the East, nearly 15,000 are in Pacific Coast service, and the remaining 48,000 cars are serving the balance of the country.

Daily Haul

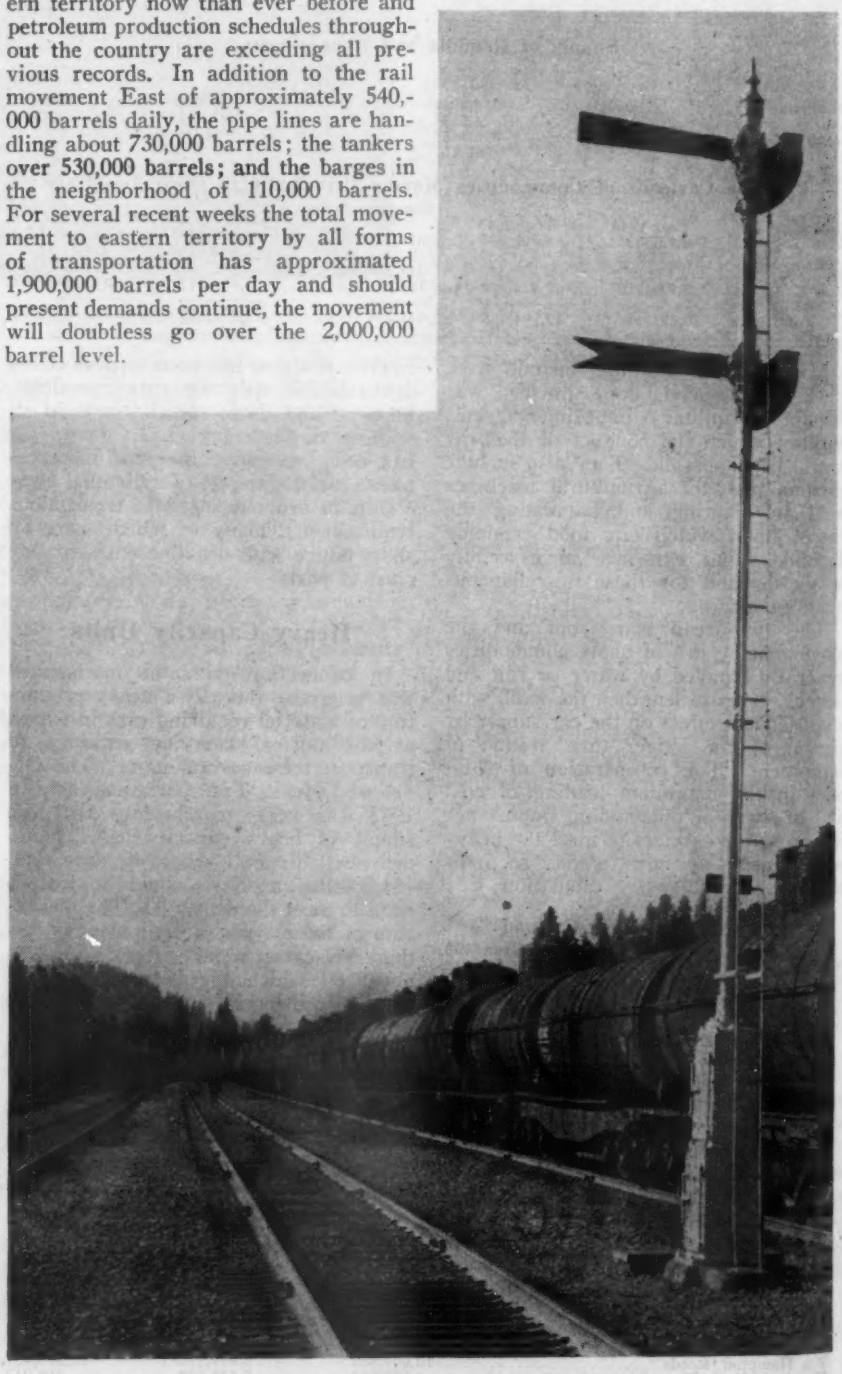
The railroads are now moving about 540,000 barrels, or nearly 2,500 cars daily, to Atlantic Seaboard destinations after having passed through one of the worst winters ever experienced in the eastern part of the country. While oil for the military forces was exempted from the terms of these embargoes, there was a period in the early part of February when over 4,000 loads of petroleum and possibly a greater number of empty tank cars were necessarily held back on the several lines operating through the Buffalo gateway.

Despite these great difficulties, most of the oil for the military forces was kept moving over diverted routes to our eastern ports and there is no evidence that this temporary traffic back-up resulted in any hardship to our fighting men overseas.

At the present time an average of 82 symbol oil trains start out every day from producing areas in various sections of the country. Of these, 65 trains operate to the Eastern Seaboard, 12 to the Pacific Coast, and 5 are confined to the Midwest. These trains are operated on published O. D. T. schedules, both as to loaded and empty movement, and are averaging on time or better performance. Most of the oil must be moved long distances. Shipments for the East Coast, originating in the Southwest or Middlewest, are handled an average of 2,000 miles and the cars in these trains are now being turned around in about 18 days. Similarly the trains to the West Coast must be moved somewhat over 1,500 miles and these cars are back at loading points within 15 days of the previous loading.

More oil is being transported to eastern territory now than ever before and petroleum production schedules throughout the country are exceeding all previous records. In addition to the rail movement East of approximately 540,000 barrels daily, the pipe lines are handling about 730,000 barrels; the tankers over 530,000 barrels; and the barges in the neighborhood of 110,000 barrels. For several recent weeks the total movement to eastern territory by all forms of transportation has approximated 1,900,000 barrels per day and should present demands continue, the movement will doubtless go over the 2,000,000 barrel level.

The oil movement to the Pacific Coast area, now averaging 550 cars daily, originates at various loading points in the central part of the country, including the southwestern fields of Texas and Louisiana, Illinois and Indiana refineries, and also some shipments from Kansas, Wyoming, and Utah. A movement of West Texas crude oil has recently been instituted to the Los Angeles area. Here again the railroads are making an excellent showing, by handling this oil faster than required by O. D. T. schedules. As the tempo of the war in the Pacific increases, more oil will doubtless be moved overland to



The Oil Movement Continues Heavy, with Hundreds of Cars Going to the Pacific Coast Daily

our West Coast ports. Tentative schedules set up by the Petroleum Administration for War contemplate a possible rail movement of 200,000 barrels, or 1,000 cars, daily to Pacific ports before the end of this year. Surveys made of railroad capacity indicate they will be able to handle this volume, in addition to the probable increased movement of other military traffic.

With somewhat over 75 per cent of all tank cars in petroleum service, our railroads are called upon to originate and move through to destination over 7,500 cars of these products every day of the week, including Sunday. There are not enough tank cars in this country to take care of all demands, hence it is necessary to insure their maximum serviceability by an intensive program of constant maintenance and repairs. This job has been administered by the O. D. T. Tank Car Maintenance Committee, and although tank cars have an average age of about 20 years, the maintenance work has been so efficiently managed that bad order cars have uniformly amounted to less than 2½ per cent of the total ownership.

While the emergency aspect of the eastern oil movement may be considered virtually past by reason of the construction of the Big Inch and Little Big Inch pipe lines, followed by return of a number of tankers to Coastwise service, it is interesting to note that rail movement to that area continues highly essential. This is due in large measure to its mobility, as compared with the limitations of fixed terminals in the pipe line or tanker movements. There is also the fact that tank cars have necessarily taken the place of countless trucks which have become unserviceable through lack of parts or tires, and when there was a recent disruption of barges caused by high water on the Ohio and Mississippi rivers, the railroads were required to move a considerable volume of oil previously scheduled to be handled between terminals located on these rivers.

No Needless Detention

Shippers and receivers are making a major contribution toward the successful handling of such vast quantities of oil by loading and unloading tank cars promptly and working Sundays and holidays at overtime rates to make certain there will be no unnecessary detention of them. The Army and Navy are doing a particularly noteworthy job in expediting unloading of the considerable number of cars handling petroleum for the military forces, which necessitates co-ordination with ship schedules for overseas movements. The demurrage rates on tank cars were sharply increased by I. C. C. Service Order 263, effective last January 22, which also reduced the free unloading time from 48 to 24 hours, but records indicate that petroleum receivers formerly unloading the bulk of their cars well within 24 hours, under the stimulus of the service order and in consideration of the serious need of cars, have recently made a further substantial reduction in the average time consumed in unloading.

The Tank Car section of the Car Service division has maintained close working arrangements with various governmental agencies, the oil industry, and the railroads since the early days of the war.

Records of symbol train performance and other essential information have been made available currently to the Office of Defense Transportation, the Petroleum Administration for War, the Interstate Commerce Commission, and the War and Navy Departments. Representatives of the oil industry and the railroads have been kept regularly informed as to rail transportation requirements for petroleum as well as other commodities moving in tank cars. Co-operation has been the keynote during the entire period of these joint activities, and without doubt the ability of all concerned to work together has been of primary importance in the success of this tremendous movement. All have recognized that "Oil Is Ammunition" essential to the winning of the war and have been governed accordingly in arranging for its transportation.

Interchange with Mexico

Prior to the war a large proportion, about 70 per cent, of freight traffic between the United States and Mexico was handled by water. With the diversion of vessel tonnage to rail transportation, a heavy increase occurred in traffic moving by rail. The principal proportion of this increased traffic involved movements via the National Railways of Mexico and in volume which at times has exceeded their operating capacity.

United States cars in Mexico in 1939 averaged about 915 daily. With the increase in rail traffic this number increased rapidly, being on January 1, 1943, 4,447. On the 30th of that month the I. C. C. issued Service Order 107 requiring that traffic to Mexico be regulated by embargo to the extent necessary to accomplish equalization of interchange. During that year various embargo restrictions were in effect but the balance against the United States further increased by about 450 cars. Because of this there were instituted early in 1944 somewhat drastic restrictions, which resulted in representations by the U. S. Ambassador to Mexico to the State Department at Washington favoring a more liberal policy. Following various conferences on the subject in February, Director King of the Bureau of Service of the I. C. C. and Chairman Kendall of the Car Service division spent several days at Mexico City reviewing the situation with our ambassador, with officers of the Mexican government and the National Railways of Mexico and with representatives of the U. S. Railway Mission. As a result of assurances given as to prospective ability of the N. R. M. to handle increased traffic, the I. C. C. Service Order and the Car Service division embargo were cancelled at the end of February.

This action resulted in a substantial increase in the movement of traffic to Mexico but without a compensating increase in the return movement of cars from that country. During March there was a loss through Texas junction points of 2,556 cars and in April of 1,695 cars. By the middle of March, when this unfavorable trend began to be evident, energetic protests were entered with Mexican rail and government officials. Further assurances were received that by reason of certain modifications then pending in the labor contracts on the National Railway an early improvement in return of cars could be anticipated. These exchanges continued during April. In May there was a slight improvement in the return movement of cars and the balance showed an excess northbound. In June, however, the trend turned southward again, and on the 9th of that month the assistant general manager of the National Railways of Mexico telegraphed a request that an embargo, with permits, be reinstated. C. S. D. Embargo 400 was made effective on June 10 and has been in effect ever since.

Following a conference in Washington in the late summer with Traffic Manager Mendez of the National Railways and Assistant Traffic Manager Campos, arrangements were made for Mr. Campos to be stationed continuously in Washington. Daily conferences have since been held between him and Permit Agent Arnett with respect to the type and volume of traffic to be permitted to move into Mexico. During this time I. C. C. Service Order 107 was still in suspension but on December 27 it was reinstated and provision made that, starting January 1, 1945, permits should be issued on the basis of a designated percentage of the number of cars returned from Mexico during the preceding month. This was to be 80 per cent until there was a net gain of 500 cars in the interchange, and for each such 500 car gain the percentage was to be increased by five.

Close Supervision

Traffic being permitted to move to Mexico is chiefly limited to items considered primarily essential to the economic life of that country. All shipments are required to be loaded to maximum car carrying capacity in order to obtain delivery of the largest possible tonnage in the number of cars allowed. The situation is being closely supervised by the A. A. R. and by the representative of the N. R. M., as well as by the I. C. C., O. D. T., State Department and Foreign Economics Administration. It is impossible to satisfy the heavy requirements of shippers but the traffic volume that can be allowed is being distributed as equitably as possible.

Railroads Still Highballing War Freight

Story of service for armed forces continues to be an account of superb performance in meeting greater and greater demands — V-E Day taken in stride

THE story of domestic railroad service for the nation's armed forces continues to be an account of the carriers' superb performance in meeting greater and greater demands in fully satisfactory fashion. The Army is by far the biggest shipper among the armed forces, and since Pearl Harbor the railroads have handled for it more than 250 million tons of freight. Last year the War Department shipped more than 100 million tons by various forms of inland transportation, an increase of about 20 per cent over the 1943 tonnage and more than double that of 1942.

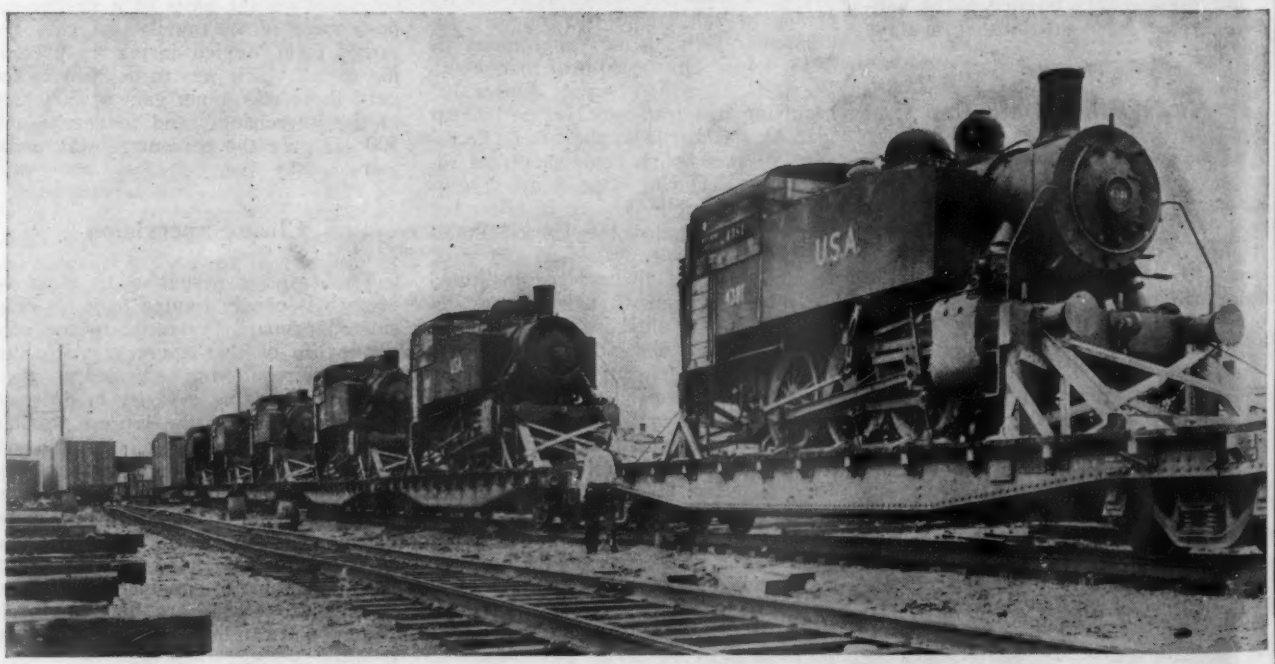
The railroads got approximately 89 per cent of the 1944 load, while motor trucks carried nine per cent and water carriers on the inland waterways two per cent. As Director J. Monroe Johnson of the Office of Defense Transportation pointed out recently, the railroads handled in March alone a greater volume of material for the European front than was moved in the entire period of the country's participation in World War I. And they did it in the aftermath of severe storms in the East, with 600,000 fewer freight cars and 22,000 fewer locomotives than they had in World War I.

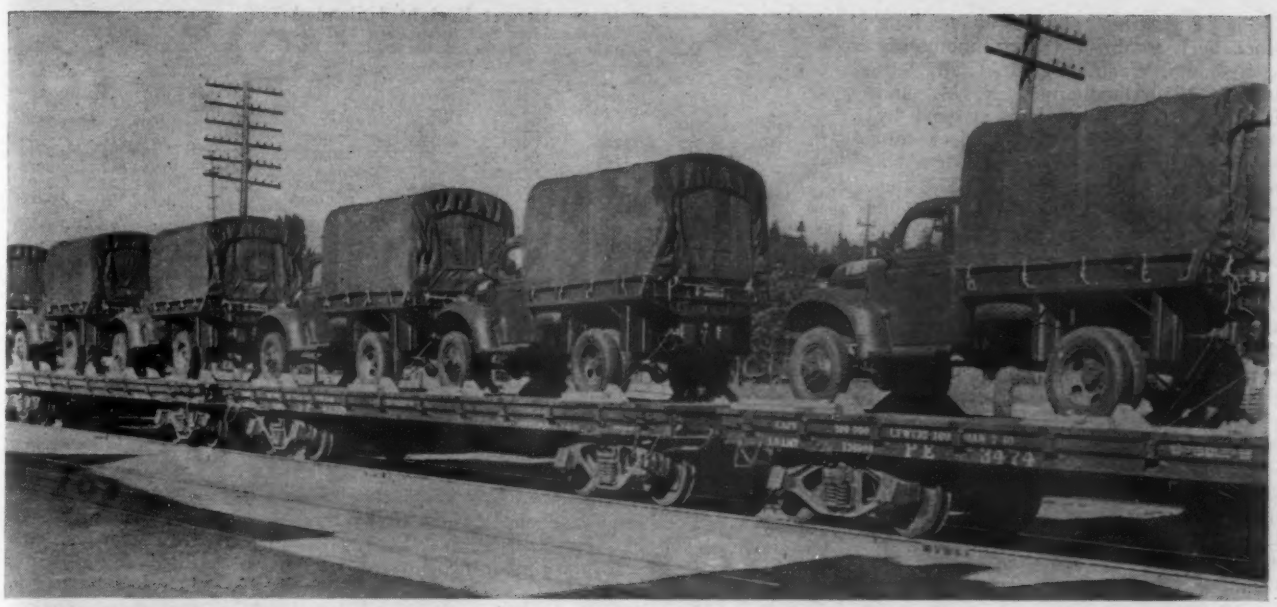


U. S. Army Photo

The War Department's March transportation bill was $212,917,171 as compared with $136,703,372 in March, 1944. Export traffic was running 1,000 cars a day ahead of the March, 1944, movement; but port conditions remained good, the "bank" of freight at all ports averaging four days capacity of the ports—or almost 50 per cent less than the free time on export freight, which at most ports is seven days.

While thus keeping the current situation well in hand, the armed forces and the railroads had also formulated the well-laid plan whereby the domestic transportation phases of V-E Day were to be taken in stride. Sometime ago the Army Transportation Corps' Traffic Control Division, headed by Brig. Gen. William J. Williamson, worked out an arrangement with the railroads whereby Europe-bound materials of war en route to the ports on V-E Day were to be stopped short by the carriers and





Rail, Highway and Water Transportation Equipment Rides the Railroads on Its Way to the War Fronts

reported to the Army for disposition. Such cars were to be switched out of trains, which were then to proceed with their civilian freight and such export freight as relief shipments and food and maintenance supplies for the troops. The magnitude of this contemplated "hold" job is indicated by the fact that from 25 to 27 thousand cars of Army export freight were usually en route to the ports during the period when the plans were made; and the War Department was committed to furnishing disposal orders on most of the cars within 48 hours after they were stopped, and on practically all within 96 hours.

V-E Day Transition Smooth

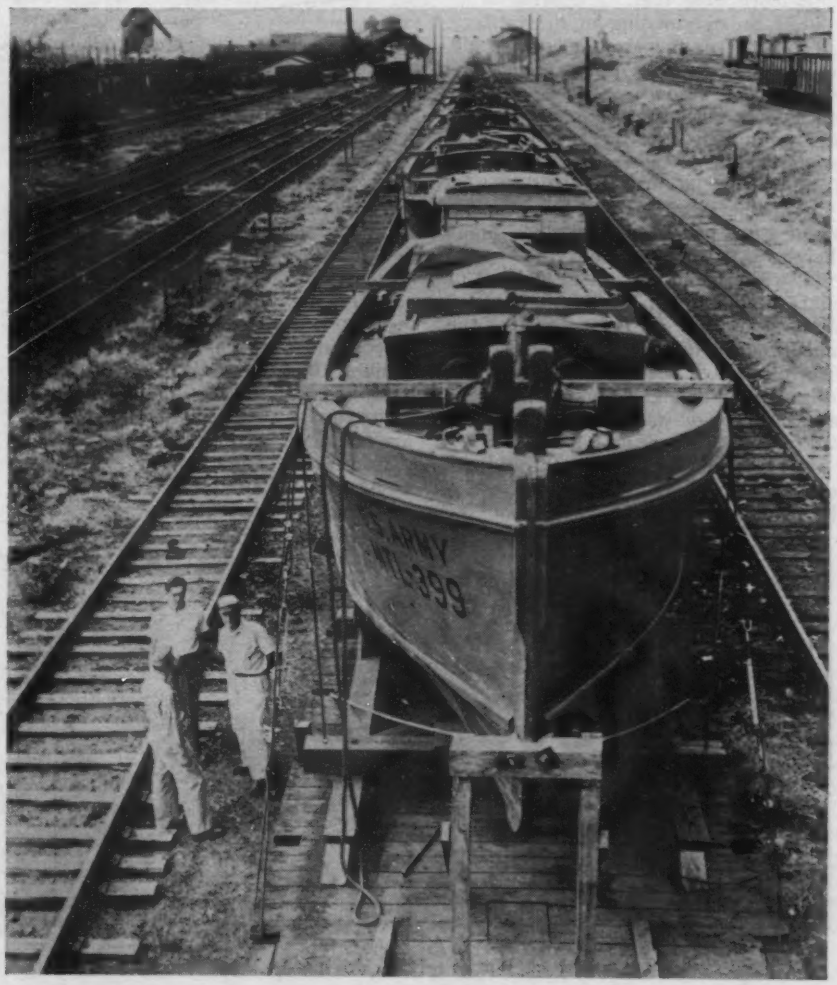
But the situation did not reach any such dramatic climax. The piecemeal ending of the European war brought with it a gradual reduction of war traffic to the ports and piecemeal execution of the V-E Day car-stopping and rerouting arrangements. For some time prior to V-E Day, the Army's supply services had been decreasing shipments of combat materials to Europe, thus cutting the number of cars en route to the ports substantially below the "usual" 25-to-27-thousand total mentioned above.

Along with this drop in volume came the advance execution of the rediversion arrangements; and many cars were stopped and reconsigned during the week beginning April 29. The only A. A. R. embargo on Europe-bound war freight found at all necessary was one applying only to the New York and Hampton Roads ports. This was effective at noon on May 5, five days before V-E Day, and it caught only about 1,500 cars. Disposal orders on all of them were furnished by the Army within 72 hours.

In the latter connection the railroads provided a section 22 quotation allowing three days free time on the cars stopped. Normally the free time on cars stopped for reconsignment or diversion is one day. The section 22 quotation also provided for adjustments of rates to the new destinations on affected shipments.

With the transition from two wars to an all-out concentration on the Asiatic conflict, the Pacific coast ports will, of course, be used to full capacity; and this means that the transcontinental railroads will be loaded to full capacity, too. Meanwhile, however, the processing of these heavier loads through the Army's five western regulating stations is expected to result in keeping the Pacific ports fully liquid.

U. S. Signal Corps Photo



The regulating stations have long since been established and functioning at Spokane, Wash.; Ogden, Utah; Salt Lake City; Albuquerque, N. M., and El Paso, Tex. They are manned by Army Transportation Corps officers and to each station there is also assigned a representative of the A. A. R. The stations work this way: When a shipment destined for export through a Pacific port leaves a point of origin, reports of its departure go to the transportation officer at the port to which it is consigned and to the regulating station on the route involved. When the shipment passes a designated point in advance of the regulating station, the latter gets a passing report which it relays to the interested port officer. If the port situation or other conditions call for holding, reconsignment, or diversion of the shipment, the port officer advises the regulating station accordingly; if no such advice is received, the regulating station lets the shipments go through to the port.

Growth of Port Traffic

As has been pointed out from time to time, it so happens that the capacity of the Pacific ports just about equals the capacity of the western railroads to feed traffic into them. It is not anticipated that the western roads will be called upon by the armed services to attempt more than that. The wisdom of avoiding an overloading of the western railroads, when the Pacific ports could not take the overload anyway, has become so well recognized by the armed forces that authoritative sources consider it unlikely that there will be any drastic change in the traffic flow on the inland transportation system of the country. In other words, there has been no change in previously-revealed plans whereby Atlantic and Gulf of Mexico ports, while handling a large volume of relief shipments for the civilian populations in occupied Europe, will at the same time be used extensively for exports of combat materials and supplies to the Pacific theater. This should leave eastern railroads with little, if any, less war traffic than they now have.

How the flow of traffic through all ports has steadily increased since Pearl Harbor is set forth in the accompanying table, which shows unloadings (exclusive of coal, grain, and bulk liquids) separated as between North Atlantic, South Atlantic and Gulf, and Pacific ports. The average daily unloadings at all ports reached a peak of 5,226 cars in 1944. This was an increase of 31 per cent above the 1943 daily average of 3,997 cars; and it was more than two and one-third times the 1940 average of 2,236 cars. And the climb continued, with each succeeding report since the first of this year recording a new monthly peak. March with its daily average of 6,713 unloadings was the biggest month on record up to that time. In that respect it supplanted February (6,067 cars), which had supplanted January (5,872 cars).

Export Freight Unloaded
(Excluding coal, grain, and bulk liquids)

	North Atlantic Ports		South Atlantic & Gulf Ports		Pacific Coast Ports		Total	
	Cars	Average Per Day	Cars	Average Per Day	Cars	Average Per Day	Cars	Average Per Day
1939....	336,786	923	273,117	748	(a)		609,903	1671
1940....	475,671	1300	268,179	733	74,027	203	817,877	2236
1941....	556,717	1525	242,795	666	80,822	222	880,334	2413
1942....	553,084	1515	177,602	487	234,156	613	954,842	2615
1943....	805,652	2207	203,002	548	453,069	1242	1,461,723	3997
1944....	1,076,387	2941	232,479	635	603,968*	1650	1,912,834	5226
Inc. 1944 vs. 1943		31%		14%		33%		31%
Inc. 1944 vs. 1940		126%		d13%		712%		134%

(a) Not available.
* Pacific Coast figure in 1944 included 58,764 cars of bulk liquids from tank cars.
d Decrease.

Approximately 59 per cent of all export freight moving into the ports during 1944 was for the account of the Army and Navy; 29 per cent was lend-lease; and 12 per cent commercial. As noted above, the "bank" of export freight at the ports is but a good working balance; so the increased flow has been accomplished without congestion. The freedom from congestion is due to effective control of the movement through the permit system. Those responsible for the issuance of permits have watched the situation closely and have not "permitted" more freight to move than could be currently handled by the ports. In the latter part of April, export traffic moving under permits was running to about 47,000 carloads a week; and an analysis made at that time indicated that approximately 26 per cent of it was going to Pacific ports.

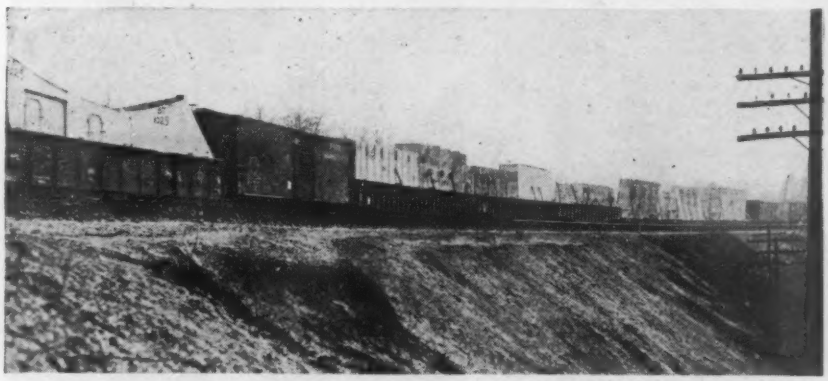
Control of traffic moving to the ports to match available shipping space was initiated in 1941, jointly by the A.A.R.'s Car Service Division and T.C.D.'s predecessor (known as the Quartermaster General's Commercial Traffic Branch). Under the arrangement, Army cargo was allowed to move to the ports only after definite shipping space was known to be available and quartermaster releases were issued for each carload shipment. After the United States' entry into the war, the O.D.T. established its overall control of export movements, using the system initiated by the Army and the A.A.R. as a basis for its operations. The A.A.R. was continued as the validating agency for all commercial shipments while T.C.D. was established as the agency to issue permits—or what are better known as QMR releases—for all government shipments. The A.A.R.'s role in this port traffic plan is carried out under the direction of the Car Service Division's manager of port traffic, G. C. Randall.

Mutual Cooperation

Carefully worked out and fully cooperative arrangements like the port plan have permeated all railroad wartime relationships with the armed forces and other war agencies of the government. That is the key to the carriers' success in making good in a big way on the phenomenal transportation job assigned to them. Because of the Army's preeminence among government-agency shippers, its relationship with the railroads affords the outstanding example of how the mutually-cooperative plans function.

As indicated above, the Army's domestic transportation requirements are the responsibility of the Traffic Control Division. Located at T.C.D. headquarters in Washington's Pentagon Building is the principal office of the Car Service Division's Military Transportation Section, headed by A. H. Gass who also maintains close liaison with the Navy, Marine Corps, and Coast Guard. The freight shipments of these three services have lately been about 50,000 cars a month as compared with the Army's 330,000 cars.

While the Military Transportation Section follows through further on troop movements (furnishing routings for troop trains, for example), it is no less alert to T.C.D.'s freight transportation needs, being ever ready to aid in meeting emergencies like hurried calls for expedited movements of critical materials or for diversion and reconsignment of war freight en route.



Solid Trainload of War Freight Moving Over the Erie



Loading Tanks on Flat Cars

Likewise has T.C.D. undertaken to be helpful to the railroads in so far as the military situation has permitted. Its constant policing and concerted effort to obtain quick release of equipment at War Department installations had such favorable effects by the end of 1944 that 87 per cent of all cars being placed for War Department loading or unloading were being released within less than 48 hours. An even more concerted drive is constantly under way on the matter of utilizing direct routes in order to reduce to a minimum the number of car days required for movements. Cooperation has also been extended to the railroads in helping them to avoid embargoes at various points by eliminating unnecessary transportation of War Department freight or postponing what movements could be delayed until such time as the carriers were better able to handle them.

Aid During Storms

The latter was particularly true during the period of last winter's severe snow storms which hit the eastern railroads at a time when an attempt was being made to expedite the production of such vital materials as ammunition, guns, radio equipment, air gliders, and various other critical items. Only through an intelligent use of existing transportation facilities — expediting such movements as were essential, and eliminating or postponing such movements as were nonessential—was the War Department able to get its essential traffic moved from sources of raw materials to manufacturers and from manufacturers to the ports for export. The stringent embargoes against civilian freight in this period did not, of course, apply to War Department traffic; but action was nevertheless taken by T.C.D. to stop temporarily all movements on War Department bills of lading which were not absolutely essential. Such action contributed materially to the easing of the carriers' difficulties, while at the same time it enabled the War Department to carry forward with essential speed various accelerated production programs and to get essential items to the ports as required.

Also, T.C.D. has undertaken to hold calls for special trains to a minimum. The total number which had to be run in 1944 in order to meet the needs of expedited production and to provide for arrival of freight at ports to meet convoys was only 375—and 100 of them were run during the month of December when the railroads were encountering adverse winter operating conditions. Last year's total of 375 special trains represents less than one-third the number which were requested by various War Department branches, whose requirements T.C.D. was able to meet by otherwise expediting movements.

Less Cross-Hauling

Other efforts of T.C.D. have been directed toward the elimination of unnecessary cross-hauling and other wasteful transportation of War Department supplies. This effort has taken the form of reducing to a minimum long hauls and cross hauls of various commodities, also unnecessary shipments from one port to another where the first could have handled the materials for export. Some difficulties have been encountered in implementing this conservation program because of the various types of commodities involved, the current availability of ships, and the changing fortunes of war.

Handling L. c. l. Freight

This, in brief, is the story of carload rail service provided for the War Department. The Army has found it so good that it turned to the Railway Express Agency for expedited service on only one percent of its 1944 volume. Also, an increasing load of l.c.l. war freight continues to be handled smoothly and efficiently through the Army-Navy Consolidated Car Service established by T.C.D. in 1942.

These freight forwarding operations were described in the *Railway Age* of August 19, 1944, page 304. Some 16 stations are now in operation, the Chicago facility being the largest—both as consolidator and distributor. In March it dispatched 2,746 consolidated cars and received for distribution 807 carloads. Biggest of the western distributing stations is at Los Angeles, Calif., where 629 cars were received in March. Nearly 6,500 cars carrying 206 million pounds of freight were dispatched from all consolidating stations in March. Navy freight accounts for approximately 42 per cent of the volume handled at the four principal consolidating stations—New York, Philadelphia, Pa., Chicago, and St. Louis, Mo.

T.C.D. is still proud of its record in utilizing for its westbound movements refrigerator cars which would otherwise return empty to California and Utah points. Of the 6,500 cars dispatched in March, 2,373 were reefers.

Progress in Worsting Winter Weather

Congestion this year as compared with the catastrophe of 1918



THIS year the men operating the railroads of America, with the cooperation of their customers, proved—fortunately for the industry and for the country—that history need not repeat itself.

After three war winters that were relatively free from major storms, the railroads were hit—particularly in the northeastern industrial states—by a series of blizzards that were of unprecedented and almost catastrophic proportions over large areas, and generally were comparable in severity only to the series of storms that struck the same general territory early in 1918. Then as now, of course, the country was involved in a war of such magnitude as it had never before experienced, one which taxed its capacity to produce and to transport what was produced. But the effect of these blizzards, both on the railroads and on the general war effort, was quite different this year from the effect in 1918.

World War I Conditions

The country's railroads went into World War I under handicaps that brought about serious operating difficulties before the 1918 blizzards struck, and these difficulties, largely occasioned by conditions entirely beyond railroad control, led to the institution of government operation under Director General McAdoo beginning December 28, 1917. The main routes in the East were badly congested, due to a large extent to the uncontrolled use of priority orders on freight shipments and the practice of loading freight before it could be handled at its destination, thus forcing the use of freight cars for dead storage.

As early as November, 1917, the Pittsburgh area had become so badly tied up that a general embargo on movements through that gateway was put into effect, applying even to perishables, requiring the diversion to routes north or south of freight eastbound from Chicago, St. Louis and points west, and of freight westbound from Atlantic coast ports. Coal traffic was especially disturbed, and fuel shortages became so critical in New England that coal trains were run through the Pennsylvania tunnels and passenger station at New York. In an effort to break the blockade, western roads in mid-December were called on to supply 100 locomotives for use on eastern lines; the Pennsylvania discontinued its New York-Chicago "Broadway Limited"; the best passenger trains between New York and Florida were annulled north of Washington; and other passenger schedules were adjusted.

Little improvement was noted by January 1, 1918. The Baltimore & Ohio was badly congested east of Pittsburgh, largely due to the inability of eastern connections to accept freight from it, and the Pennsylvania was no better off. Freight was moving at about 64 per cent of normal volume on the Pittsburgh & Lake Erie. Passenger service in the East generally was so impaired that Mr. McAdoo used the term "breakdown" in describing it. Orders were issued to discontinue more than 400 passenger trains on eastern roads, effective January 6, 1918. The Pennsylvania dropped 155 trains, including the "Congressional Limited," its best New York-Washington train, and its Hell Gate bridge trains between Boston and the West. The New Haven dropped 85 trains, and the B. & O. and New York Central 60 each. The Pennsylvania allowed only one parlor car to be included in any train carrying coaches, and many club cars and dining cars were eliminated.

Industry Shut Down 5 Days

Then came the storms. The first paralyzing blizzard concentrated its fury on the Chicago area, where it struck January 5. Hardly a train moved in that section for over 24 hrs. Scarcely had the snow been cleared from the tracks when another crippling storm hit the same section, on January 11, and this swept on into the East. Chicago was practically cut off from the East until the "Twentieth Century" came in on the 13th, more than 24 hrs late. Some trains that left Chicago late on the 11th were recalled, and many of them took 48 hrs. to get back. No freight service was attempted there until the 14th, except for some coal and perishables. Milk deliveries were restricted to families with young babies. Coal was so scarce that the Chicago Great Western and the Milwaukee were unable to maintain normal operations, even where tracks were not obstructed.

In an effort to reduce the prevailing congestion, a "freight moving week" was ordered, effective January 14. It brought no improvement; instead, conditions became worse. In some coal fields 90 per cent of the mines were shut down for lack of cars. So short was the supply of coal that the government commanded all manufacturing industry in the East to come to a complete stop for 5 days, effective January 18, 1918. Only producers of food and of especially vital war materials were exempted from this order, whether or not they had sufficient fuel to operate. "The wheels were choked and stopped," said the Fuel Administrator; "zero weather, snowbound trains; terminals congested; harbors with shipping frozen in; rivers and canals impassable—it was useless to continue manufacture and pile confusion on top of confusion."

The 5-day shut-down of industry was followed by 10 "fuel-less Mondays," when only absolutely essential war plants were allowed to operate. More storms hit the northeastern states, especially Ohio, New York and New England. Many roads placed local embargoes and the Pennsylvania declined to accept any general freight; its line between Pittsburgh and Philadelphia was "practically blocked," the Interstate Commerce Commission said. More than 100 trains were left daily in its Pitcairn and Conway yards because there was no power to move them. The Middle division was 11,000 cars a day behind

normal movements. Passenger trains were stalled all the way from Philadelphia to Pittsburgh.

On February 3, 1918, after some relief had been felt, fresh storms stopped freight movement almost completely on the New York Central west of Albany. That road suspended operations on its main line in "upstate" New York, and traffic was impeded as far west as Elkhart, Ind. The weather was so bitter that men refused to work to free stalled trains. The eastbound "Lake Shore Limited" was stuck in a drift for 24 hrs.

In New England practically all freight trains were halted by snow. In western Pennsylvania passenger trains were limited to 6 cars, which 2 engines were barely able to keep moving. Throughout the East, trains were held up at all important terminals waiting for engines.

The Winter of 1944-1945

That, in brief, was the picture in 1918. The weather's vagaries were no less pronounced in 1945. W. C. Kendall, chairman of the Car Service Division of the Association of American Railroads, has described conditions graphically. "The trouble began on the evening of December 11, 1944," he said, "with a 15-in. snowfall in the Buffalo area. This was followed by intermittent storms until December 27, when another 15-in. snowfall occurred, accompanied by high winds, extending for nearly a 48-hr. period. . . . Railroad yard operations were virtually stopped, as yard crews could not see to perform any switching for the duration of the storm. Within 3 or 4 days there came a thaw and a warm rain which saturated the snow. It turned cold soon thereafter, and then another 15-in. snowfall occurred. With the softening of the snow and the increasing cold, ice was formed about the wheels of the cars in the yards up to height of about 18 in. In many places the snow had drifted so it was even with the tops of the cars. . . . The frozen-in cars had to be dug out, one by one, with pick and shovel. One road was reporting from 35 to 50 derailments each day in its yards at Buffalo by reason of the ice around rails and switches."

These storms continued well into March, and the total snowfall was about 110 in. At the peaks of the successive blizzards, traffic was impeded. Freight and passenger trains on branch lines were stalled, while the tonnage of main-line freights was cut in half, or they were double-headed. Passenger train consists were cut to a minimum, and some sleeper runs were rearranged to match train lengths more evenly to available power. Some localities in "upstate" New York ran short of coal; their places of amusement were closed to conserve fuel; and the Army was called on for help when other sources of manpower failed.

But the main-line trains kept moving; war industries kept running; and the movement of military freight to the Atlantic ports for shipment overseas was greater in one month this winter than in the whole duration of World War I. To bring this about, the eastward movement of some 35,000 carloads of freight was frustrated, but the last set-out car was moved on March 14.

Except for occasional temporary blockades, the New York Central kept all of its 4 main tracks open across New York, and despite the storms, its hump yards in the Albany, Syracuse and Buffalo districts continued to operate. Both main tracks of the Erie were kept open, except when derailments occurred, and that road maintained nearly normal freight movements on its New York-Chicago line through the blizzard period. The Lackawanna's trains were moving through drifts as high as the locomotive stacks, but they were moving. The Pennsylvania's main east-west lines were not so severely affected by the storms as the more northerly roads, but weather conditions were adverse to normal operations. Nevertheless, traffic moved without serious blocks, war freight being accelerated by transfer of some passenger power to that service. The B. & O. was fluid except that some of its connections could not accept traffic as fast as it reached interchange points.

The Nickel Plate experienced congestion when yards along Lake Erie were frozen up, but relief was soon obtained. The roads connecting the Middle West and Potomac Yard and the Canadian roads were called on to handle extra business for the relief of the most congested lines, and the C. & O. reported that the week beginning January 22 was the busiest it ever experienced. Temporary interruptions to service were reported by most of the roads serving the storm-swept area, but there were no prolonged tie-ups. Perhaps the most urgent situation developed between December 31 and the morning of January 2, in which period there were 5 serious wrecks, serious in the sense that they blocked main lines of the Pennsylvania, Erie and B. & O.

Embargoes Aid War Traffic

The A. A. R. Car Service Division, in cooperation with the Office of Defense Transportation, employed its embargo power to afford relief to the area most affected by the storms, and late in January E. W. Coughlin of the Car Service Division was designated as an I. C. C. agent with power to divert or reroute traffic over any open line in Eastern territory without regard to normal rates or routes.

The first embargo (No. 35), effective January 22, covered carload and l. c. l. freight moving into the territory east of Chicago and St. Louis and north of the Ohio and Potomac rivers, but did not apply to traffic originating within that area.

A number of important commodities, live stock, coal, meat, export traffic, tank car traffic, l. c. l. food and drugs, and shipments on government billing, were exempted from this embargo. At the same time another embargo, No. 37, limited the eastward movement of bulk grain across a line connecting Toledo, Columbus and Cincinnati.

When it developed that these embargoes were not restrictive enough to counteract the continued storms, they were superseded on January 25 by No. 43, which also applied to both carload and l. c. l. freight and covered about the same area as No. 35. This embargo, however, applied also to all shipments originating within the affected area, whatever their destination. The exceptions were much more rigid, including only export traffic moving under permit, shipments on government bills of lading for the armed services, traffic for ordnance plants, and shipments under special Army or Navy permit.

A Breather for Railroaders

Embargo No. 43 was effective 3 days. Further relief being necessary, No. 47 was issued to be effective from February 3 to 7. A similar eastern area was covered, but coal and petroleum were exempted from its restrictions. Later, in order to break up an undesirable concentration of box cars in the East, embargo No. 93 was put into effect from March 7 to 12, applying to l. c. l. traffic from the West to points east of the Missouri river, generally speaking. The only exceptions to it were medicines and traffic on government billing.

To insure the effectiveness of these embargoes, the Army set up, in its Traffic Control Division, a special "screening" unit to determine what traffic was sufficiently essential to move under permit against the embargoes. During the life of embargo 43, this unit issued certificates for the movement of 6,296 cars, less than 30 per cent of the requests for permits which it received. In addition, for the duration of this embargo, the Army applied a self-imposed embargo on such of its domestic traffic as was considered not immediately necessary, even though it was on government billing. This was accomplished by a wholesale annulment of route orders, new ones being issued where circumstances required such action.

The effect of these embargoes, Mr. Kendall has said, "was generally helpful in that they gave the railroads a breathing spell to a limited extent, during which they could release some of the accumulated traffic. The loading dropped during the days embargoes were in effect by several thousand cars, but the car supply generally was sufficient so that loading deferred by the embargo was loaded during the few days following the lifting of the restrictions, and it is somewhat questionable whether the ultimate effect of the embargo was beneficial or otherwise." Possibly the elements' effect on the coal movement was most felt, in the long run, as between the storms and early spring floods the mines received, in the first quarter of 1945, 55,620 fewer cars than they ordered.



Filling of the Railroads' Orders for 2,891 Carmen and 1,912 Car Helpers Would Go a Long Way in Easing the Present Tight Car Supply

Wanted 95,000 Men

By America's No. 1 transportation agency —Apply at the nearest railroad station

THIS advertisement might well be broadcast throughout the nation today by radio, billboards, newspapers, magazines, and all other media, for the need is acute. On March 31 the United States Railroad Retirement Board reported that it had unfilled orders for 94,738 railway employees, including 4,740 trainmen, 156 enginemen and motormen, 1,379 firemen, 3,163 clerks, 8,011 freight and express handlers, 32,057 trackmen, 1,726 signalmen and helpers, 482 linemen and helpers, 1,465 telegraphers and agents and 22 train dispatchers. Making the picture even darker, it is estimated that, as of February 15, out of a total of 1,400,000 employees, 700,000, or 50 per cent, had no railroad experience prior to Pearl Harbor.

This combination of man-power shortages and inexperienced employees has been a major factor in causing the car shortages, delays to vital freight, and considerable deterioration of railroad freight service. Because of these conditions car and locomotive repairs are postponed until necessary to prevent failure on the road, and, when made, require excessive time; trains are held for power which should have been ready hours sooner, or are held for crews which have not had their required rest; switch engines stand idle for lack of crews to man them; trains are held out of yards because other trains have been unable to depart; cars are buried in train yards because of insufficient or inexperienced clerical employees to issue proper instructions for their switching and forwarding. In short, there is a general slowing of normal operations, and increasing congestion.

The largest single drain on railroad man-power has, of course, been the nation's armed forces which have taken a total of 300,000 employees, of whom 200,000 were men whose railway service dates from prior to December 7, 1941, and who, were they in service today, would constitute an important addition to the small group of highly skilled employees remaining. The second largest loss of man-power has likewise been at the expense of the small body of experienced personnel—178,000 lost through deaths and retirements. In addition, another 100,000 men have left the railways to enter new war industries.

Selective Service Lists

Recently, Selective Service, in its efforts to satisfy the demands of the armed forces for men under the age of 30, ordered the railroads to submit lists of men in that age group who held occupational deferments. These lists showed a total of 43,020 such employees classified as follows: train and engine service 22,600; other transportation 1,390, including 300 train dispatchers and 820 telegraphers; maintenance of equipment 8,400; maintenance of way and structures 1,670, including 600 signalmen, assistants, and linemen; and all others 8,960. It was at first proposed to call all but 30 per cent of these men to the armed forces, but as a result of action by the Office of Defense Transportation the roads were permitted to retain approximately 75 per cent of this group.

On an area basis, the Great Lakes region shows the largest number of unfilled orders, 32,114 men, largely due to a large demand for section and extra gang men and for station laborers. It is in this section, where 2,063 freight handlers are required, and in the Northeastern region where there are orders for 3,720 station laborers, that there has been a serious accumulation of cars loaded with l.c.l. freight due to lack of station labor to unload them. Aside from the acute shortage of freight handlers in the Great Lakes and Northeastern regions the three Western regions are the areas of the most acute man-power shortage. It is on the lines serving these regions that the bulk of the war demand is expected to fall, and, as these roads do not have the capacity

of the multiple-track eastern systems, small total shortages can be more serious than larger deficiencies in other regions. In the Pacific Coast area there are particularly serious shortages of skilled mechanics, resulting in loss of valuable locomotive- and car-days and a smaller, though not less critical, shortage of trainmen and enginemen.

Man-power Priorities

Recognizing the strategic importance of the western railroads, the Railroad Retirement Board last October secured national man-power priorities and authorizations permitting inter-regional recruitment of switchmen, brakemen and firemen for 13 western lines. However, in March the War Manpower Commission announced that henceforth more stringent requirements would have to be met before inter-regional recruitment of labor would again be permitted, and ordered that the national priorities previously granted be allowed to expire on March 31, and required new applications based on new data. The result has been that these roads have been forced to discontinue inter-regional recruiting until such time as they can complete the farce of proving to the W. M. C. that the labor is not available in the immediate locality where it is to be used, nor in the state, nor even in the region itself. While this is not a particularly difficult procedure, it does require time, and time to get set for the coming surge of war business to the Pacific ports is one of the things the western railroads do not have. As this is written, three western lines have been able to secure an inter-regional priority for recruitment of skilled mechanics but none has been granted for other classes of employees or to other roads.

On the brighter side of the railroads' man-power picture is the undisputed fact that the recent "work or fight" orders have caused men to seek railway employment. This order, followed closely as it was by announcements of expected "cut-backs" in many so-called "war industries," has caused many to look upon railroad employment in a favorable light because of the knowledge that there will be no "cut-back" to end a deferment that may be granted. Further, the necessity of securing the approval of local selective service boards in order to change work has had a definite retarding effect on the tendency to shop for jobs and has brought greater stability to employment in the industry. So far, the railroads have been unable to secure many employees from other industries as a result of "cut-backs," primarily due to the fact that those laid off are women, chronic absentees, or those unwilling to work at railway wage scales. The few skilled workers that have been released have, in nearly all cases, been quickly absorbed by other war industries in the same area.

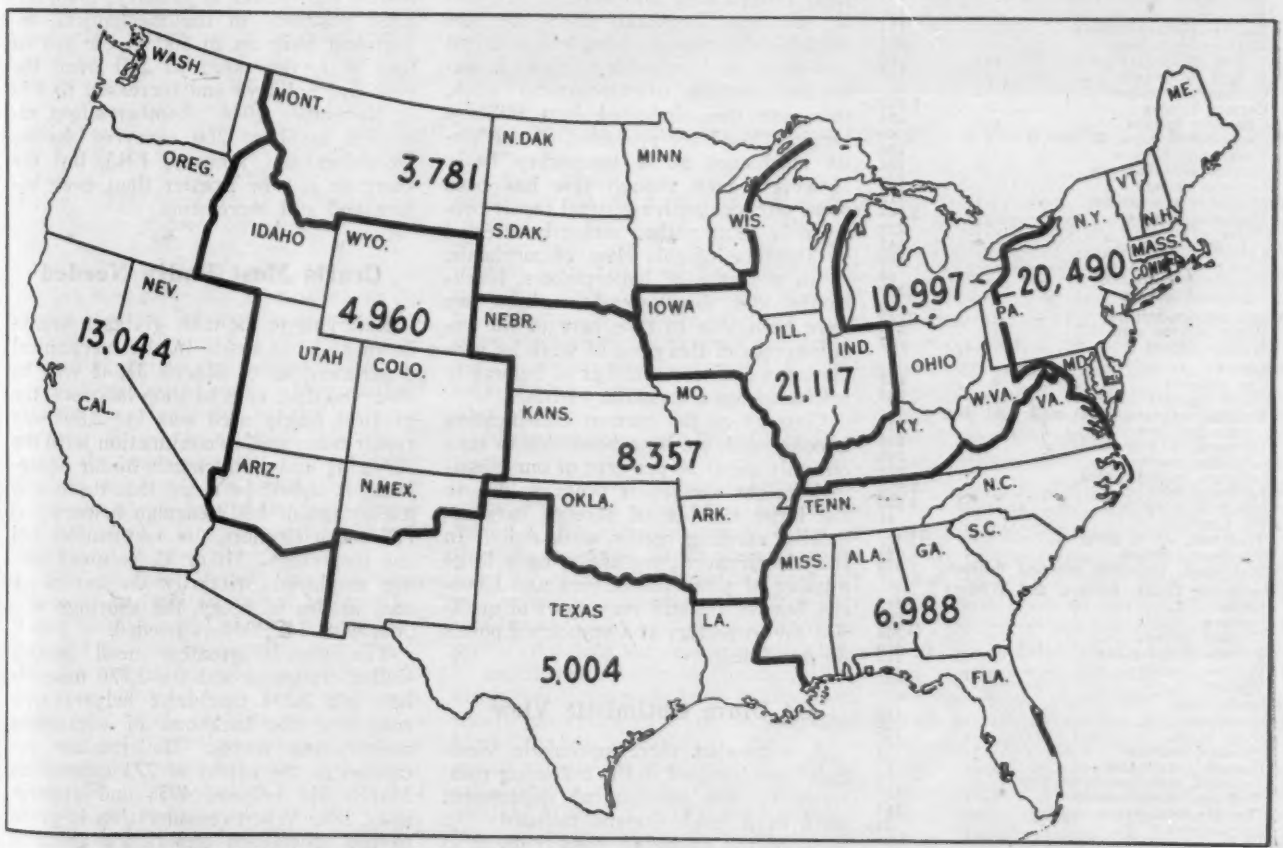
Thus, when the aircraft plants producing one type of plane lay off men, production is expanded in another factory on some other type of machine and the worker released remains in the aircraft industry. Similarly, when skilled boiler-makers and steel workers were laid off in west coast shipbuilding plants, they were immediately transferred to ship repair yards whose activities have been greatly expanded. On the other hand, labor "cut-backs" have definitely eased the competition for new labor and to that extent the railways have benefitted.

During the 11 months ending March 31, 27,482 veterans of World War II were placed by the Railroad Retirement Board in railroad employment. At present the board has literature in all of the Army and Navy discharge centers and maintains a representative in the largest ones.

Mechanical Department

As in the case of other railway departments, labor conditions in the mechanical department, responsible for the maintenance and servicing of locomotives and car equipment, are critical. Not only are repair shops and terminals undermanned, but it is estimated that half of the mechanical forces now employed are relatively inexperienced and include substantial numbers of over-age men, teen-age boys and considerable numbers of women with no previous railroad experience and consequent limited capacity to perform this class of work.

Figures compiled on a national basis



Personnel Needs by Geographical Areas, as of March 31, 1945 (Source U. S. Railroad Retirement Board)

for Class I roads by the Railroad Retirement Board indicated that, of the total man-power shortage of 94,738 on March 31, vacancies existed for 12,610 skilled trades journeymen and 11,054 skilled trades helpers and apprentices, mostly in the mechanical department. In addition there was a shortage of 788 coach cleaners and 7,950 shop laborers.

Unfilled Orders for Railroad Employees in Selected Occupations as of March 31*

Telegraphers, Clerks and Professional Men	
Clerks	3,163
Engineers, draftsmen, etc.	149
Telegraphers and station agents	1,465
Telegraphers, student	425
Towermen	66
Train dispatchers	22
Train and Enginemen	
Brakemen	4,359
Brakemen, student	264
Conductors	117
Engineers & motormen, locomotive	156
Firemen, locomotive	1,356
Firemen, student	23
Switchmen	2,873
Switchmen, student	240
Switch tenders	320
Skilled Trades Journeymen	
Blacksmiths	113
Boilermakers	771
Carmen	2,891
Carpenters	396
Carpenters, B. & B.	1,822
Electricians	542
Inspectors, car	523
Ironworkers	58
Linemen	314
Machinists	2,770
Mechanics	167
Mechanics, B. & B.	140
Painters	305
Painters, B. & B.	285
Pipefitters	273
Sheetmetal workers	240
Signalmen	597
Upholsterers	100
Welders	144
Skilled Trades Helpers and Apprentices	
Apprentices, miscellaneous	200
Blacksmith helpers	116
Boilermaker apprentices	184
Boilermaker helpers	495
B. and B. apprentices	60
B. and B. helpers	138
Carman apprentices	432
Carman helpers	1,912
Carpenter helpers	476
Carpenter helpers, B. and B.	1,390
Electrician helpers	186
Helpers miscellaneous	104
Lineman helpers	168
Machinist apprentices	713
Machinist helpers	2,244
Oilers	238
Painter helpers	142
Pipefitter helpers	169
Signalman assistants	66
Signalman helpers	1,129
Water service helpers	56
Water service men	174
Welder helpers	47
Laborers	
Car cleaners	637
Coach cleaners	788
Freight, express, and mail and baggage handlers	8,011
Laborers, B. and B.	518
Laborers, marine	164
Laborers, miscellaneous	721
Laborers, shop	7,950
Laborers, store	1,585
Tie handlers	41
Trackmen, extra gang	14,366
Trackmen, section	17,691
Watchmen, including crossing flagmen	389
Attendants, Cooks, Porters, and Waiters	
Cooks	445
Janitors	205
Kitchen helpers	225
Porters, sleeping car	269
Porters, station	101
Waiters	491
Miscellaneous	
Chauffeurs	518
Deck hands	105
Firemen, marine	64
Fireman, stationary	80
Foremen, maintenance of way	96
Foremen, miscellaneous	29
Laundry workers	164
Storekeepers	31

* Based on Railroad Retirement Board Reports.

A breakdown of some of the more important mechanical department labor needs is shown in the accompanying table.

Comments by Department Heads

The general condition of the labor supply in the mechanical department is summarized by the following terse comments from a few mechanical department heads:

"The question of equipment maintenance labor needs for the remainder of this year is subject to so many uncertainties, such as the changing demands of selective service and the progress of the war, that, at this time, we are not able to make any satisfactory estimate of our requirements."

"Our labor situation is changing so fast that we are not in position to furnish a reliable estimate of what will be needed for the balance of the year. Like other roads, we are extremely short of mechanics, in particular, and are working the maximum amount of overtime to keep up our maintenance requirements."

Another chief mechanical officer states that the picture, insofar as shortage of mechanical forces is concerned, particularly trained men, is about as black as can be painted.

A superintendent of motive power on one of the smaller midwestern carriers says, "On our line the shortage of machinists has been more serious than any other class of employees. We have lost 27 machinists and apprentices due to their being called into military service; it seems that frequently about the time machinist apprentices have had sufficient experience to be capable of doing a reasonable amount of mechanical work, they are then inducted into military service. We have promoted 10 machinist mechanics on a temporary basis. However, even though this has been done, our locomotive general repair program is being rather seriously affected by shortage of this class of mechanic.

"In the case of boilermakers, blacksmiths and sheet metal workers, we have been able to take care of the requirements of this class of work by promoting a sufficient number of helpers to mechanics on a temporary basis.

"Insofar as the carmen classification is concerned, we have been able to turn out only about 30 per cent of our classified freight car repair program due to the large number of foreign cars requiring running repair work daily. In this classification, we are using a large number of promoted helpers and laborers, but we are still very short of qualified car inspectors at a number of points on our line."

A More Optimistic View

A somewhat more optimistic viewpoint is expressed in the following comment by the mechanical department head of a large eastern railroad: "In view of the changing conditions, it is difficult to establish the needs insofar as labor is concerned for the future. While we do have vacancies now for skilled, semi-skilled and non-skilled employees, we have by the upgrading of helpers and laboring force been able in the past to meet the demands that have been made, although in some instances it has been necessary to work those who are in our service overtime.

"Comparatively few of our employees who have entered military service have been discharged and returned to us, but it is anticipated that this number will increase materially in the near future.

"Our present advice is that a more liberal granting of deferments to employees in transportation will be made effective. This will be a distinct advantage. While we have lost comparatively few mechanics, we have had quite a number of semi-skilled and non-skilled employees who were inducted into the armed forces.

"For the remainder of the year we do not anticipate any serious difficulty with respect to shortage of labor, and feel that we will be able to meet any ordinary demands that may be made."

An analysis of the mechanical labor needs on one northwestern road shows a total shortage of 635 as of March 16, of which by far the largest percentage occurs on the Pacific Coast with somewhat less in the Mountain states and relatively little at the eastern terminus.

The experience of another carrier in the same general territory reflects what has been happening in the railroad transportation industry as a whole. Starting with a small shortage of car and locomotive man-power in January, 1943, unfilled positions in the mechanical department built up to 500 in the fall of that year, decreased to 300 over the year-end holidays and increased to 850 in November, 1944. Another slight recession to about 760 occurred during December and January, 1945, but the shortage is now greater than ever before and still increasing.

Crafts Most Badly Needed

Referring to the table giving a breakdown of labor needs in the mechanical department as of March 31, it will be observed that, next to shop laborers, the greatest single need was for 2,891 car repair men; and, in conjunction with the servicing and maintenance of car equipment, it should be noted that there was a shortage of 1,912 carman helpers and 788 coach cleaners, not to mention 523 car inspectors. M. of E. painters also are employed primarily on car work and, in this category, the shortage was 305, with 142 helpers needed.

The second greatest need among skilled craftsmen was for 2,770 machinists and 2,244 machinist helpers who constitute the backbone of equipment maintenance forces. Boilermaker vacancies to the extent of 771 existed on March 31; helpers, 495; and apprentices, 184. When consideration is given to the specialized experience required in maintaining boilers so that locomo-

tives can continue to operate safely and efficiently, it is evident that railroads should be given every possible assistance in retaining and supplementing present boiler repair forces.

Electrical Repairs

With a shortage of 542 electricians and 186 electricians' helpers as the next most serious handicap, it is apparent that the railroads need help in building up this important category also. The great bulk of electrical maintenance work occurs in the mechanical department and has shown a marked tendency to increase in recent years. The performance secured with Diesel-electric locomotives, including switchers, passenger and freight power, is absolutely dependent upon the speed and effectiveness with which electrical repairs can be made.

Other skilled labor requirements, smaller in number but also vital to the efficient maintenance of locomotives and cars, included, as of March 31: mechanics, 167; blacksmiths, 113; pipefitters, 273; sheet metal workers, 240; upholsterers, 100; and welders, 144.

Reclassification Hazard

The success of railway mechanical departments in maintaining enough locomotive and car equipment in serviceable condition to meet traffic requirements this fall will depend to a considerable extent on the policy followed by the Selective Service System with respect to the deferment of essential railroad workers. According to a statement issued by the Association of American Railroads in April, the estimated number of occupationally-deferred employees on Class I railroads below the age of 30 was as follows: Skilled craftsmen, 4,900 or 11.4 per cent of the total; helpers, 3,000 or 7 per cent; apprentices and helper apprentices, 500 or 1.1 per cent; total 8,400 or 19.5 per cent.

While the new selective service policy adopted early this year called for the reclassification of most occupationally-deferred men from 18 to 29 years of age, it was explained at the time that only a limited number of men in key positions would be continued in the deferred classes. When the effect of this drastic move in reducing vital railway labor became apparent, the Office of Defense Transportation was authorized to ask deferment of a large percentage of men in critical railway occupations.

The promised relief does not seem likely to be realized, in full at least, because local selective service boards, hard pressed to meet increased monthly quotas, are reclassifying to Class 1-A workers over 30 who have been previously deferred. Since workers over 30 years of age have more experience and are presumably more valuable than those under 30, this is another blow aimed at the productive capacity of railway shops, car repair yards and engine terminals.

As pointed out in the A. A. R. statement referred to, there is no consistency in deferring men below 30 and refusing to defer men over 30 in the same occupations. The loss of these additional men will make it increasingly difficult for railways to perform even the minimum amount of maintenance work necessary on cars and locomotives to meet service requirements.



Nearly 3,000 Machinists Are Needed at Once if Vital War Freight Is to Keep Moving

Maintenance of Way Needs

The man-power situation among the maintenance of way and structures forces as the active working season of these forces opens shows some improvement over that which existed last fall and a year ago this time, and considerable improvement over the situation that prevailed during the most acute shortage in maintenance labor in October, 1943, but it is still definitely bad. In fact, with record programs of work contemplated in the months immediately ahead, programs which are estimated to involve expenditures of approximately $1,325,000,000 to keep the railroads' physical properties in condition to meet essential war-time requirements, the situation may well prove as serious in 1945 as it was in both 1944 or 1943, in spite of smaller numerical shortages.

Just how the situation in the maintenance of way department will be affected by the fall of Germany is a question that is on the mind of every supervisory officer in the maintenance department, still faced with inadequate gang organizations, inexperienced labor and heavy turnovers. Ultimately, readjustments in military production, the return of veterans to civilian life and other factors are certain to have a favorable bearing upon the overall labor picture of the railway industry, but the extent to which they will affect the man-power needs of the maintenance of way forces is not so clear. In fact, there are indications that present factors tending to increase the overall available labor supply are having little effect in increasing the maintenance of way and structures forces, and especially those forces engaged in track work, there being a distinct tendency among those available for employment to shy away from section and extra-gang work in favor of tasks that are con-



The Number of Mexicans at Work on the Railways May Well Approach 75,000 During the Coming Summer, Under the Recently Raised Importation Ceiling

sidered less arduous and more remunerative.

As of March 31, the unfilled openings in the maintenance of way and structures department, according to figures compiled by the Railroad Retirement Board, amounted to approximately 40,100 in 55 different employment classifications. This number compares with reported unfilled openings of approximately 52,000 workers in 65 classifications in this department at this time last year, when the needs of the roads for sectionmen were reported as 32,270, and for extra-gang men, 10,637. By comparison, their present unfilled needs, as reported on March 31, amounted to 17,691 sectionmen and 14,366 extra-gang men, a sizable decrease as regards sectionmen, but an increase of nearly 4,000 as regards extra-gang laborers. Both are still serious, and may well grow worse as the peak of the present working season is reached in the summer and early fall, offsetting factors to the contrary. Shortages in other major employment classifications in the maintenance of way and structures department as of March 31 were 4,405 bridge and building carpenters, helpers, mechanics, painters, ironworkers, apprentices and laborers; 246 water service mechanics, helpers, laborers and pumpers; and 1,792 signalmen, assistants and helpers.

Shortages Widespread

As during the preceding war years, shortages are reported in all parts of the country, with the heaviest needs, as previously, in areas of greatest industrial and farming activity, as well as in sparsely populated areas. Sectionally, the largest unfilled needs for track workers, as of March 31, were in the Great Lakes region, where total needs were reported as 10,580, and in the Southwest and Northeast, where the needs were set at 5,479 and 5,060, respectively. The roads in the Pacific Coast area reported needs of 4,636 trackmen, in the Northwest, 3,892 trackmen, and in the Southeast, 2,410 trackmen. By comparison, the needs for trackmen in these territories as reported one year ago, were as follows: Great Lakes, 12,567; Southwest, 7,670; Northeast, 7,567; Pacific Coast, 4,941; Northwest, 5,887; and Southeast, 4,265.

75,000 Mexicans

That the present labor shortage among the track forces is not more serious can be attributed to the many and varied methods that have been employed by the railways to fill their man-power requirements, working both alone and in co-operation with the Railroad Retirement Board and through it, with the United States Employment Service. Of these methods, all of which have been discussed in these pages previously,* the most outstanding, and the one which promises to continue to have the greatest effect, is the widespread employment of Mexican citizens, of whom more than 55,000 are now in the country, with the prospect that this number may increase to as much as 75,000 during the coming summer. Possibly the second most effective expedient, at least insofar as numbers are concerned, is the employment of high school boys, resort to which had a pronounced influence on the track labor situation last summer, and which promises to have an equally important effect in helping to fill the man-power needs of the roads for track workers in the months immediately ahead.

* See *Railway Age* for May 20, 1944, page 937, and January 6, 1945, page 51.

Contribution to War

As regards the arrangements which have been worked out between the governments of Mexico and the United States, permitting the employment of the citizens of Mexico in unskilled occupations on the American railroads, this may well prove to have been one of the outstanding indirect, if not direct, contributions of Mexico to the winning of the present war. Without the aid of these workers, which have numbered as many as 13,000 on at least two roads, the maintenance of the track structure, for lack of other workers, could not have kept pace with war traffic demands.

A year ago at this time, from a start in May, 1943, which permitted the entry of 6,000 Mexican citizens for work on the railways, the railways were allowed to import up to 40,000 such workers, and approximately 24,000 were then actually employed, largely in track work. In July, 1944, the ceiling on importations was raised to 50,000, and, indicating the continuing concern of the roads about their labor requirements, this ceiling, on the urgent request of a number of roads, which either wanted Mexicans for the first time, or which wanted to increase the number already employed, was raised to 75,000 early last March.

At no time has the full allowed quota of Mexicans been in the country, but

the number at work and the number of different roads employing them at any one time has risen steadily, with increasing satisfaction on the part of both the Mexicans and the railroads. To April 14, the last date for which figures are available, 104,589 Mexican workers had moved in on the railroads and more than 52,000 were then at work on 36 roads in all parts of the country. Having continued to enter the country steadily since April 14, the number of Mexicans now at work on the railways exceeds 52,000, with the expectation that before the summer is over it will rise to near the 75,000 ceiling mark.

Working under six-month agreements, which guarantee free transportation back to Mexico following the termination of these employees' contracts, it is not surprising that there has been a large turnover among the Mexicans, especially among those whose contracts have terminated in the fall or winter, when weather conditions are generally less favorable in many parts of the country in which they are being employed.



Thousands of High School Boys, the Recruitment of Whom Is Well Under Way, Will Again Supplement Regular Track Forces This Summer

However, indicating the growing acceptability of the plan to the Mexicans is the fact that whereas earlier as many as 25 per cent of them quit before the termination of their contracts, and only about 25 per cent of those who filled their contracts renewed them for another six-months' period, today, "quits" before termination of contract have been reduced to approximately 20 per cent, and as many as 60 per cent of the remainder are signing renewals.

More Mexicans Requested

The employment of Mexicans has not been without a large amount of inconvenience and expense to the railways, but, on the whole, they have found this justified by the results being secured with the Mexicans, the large majority of whom have proved themselves adapted to the work assigned them, and particularly to work involving the use of power tools and other units of work equipment.

Specific evidence of the growing acceptability of the Mexicans to the railroads is seen not alone in the repeated ceiling increases on importations, but also in the fact that the most recent increase to 75,000 was based largely upon the requests of as many as 26 different roads for increases in their existing quotas, increases which ranged from as few as 75 in the case of several of the smaller roads, to as much as 9,000 in the case of the Pennsylvania, with a prior quota of 4,585.

High School Boys

In the matter of hiring high school boys, another strictly war-time expedient in the light of the unavailability of older and more mature boys and men, little can be said definitely about the prospects for the coming summer months, except that under stimulus being furnished by the Railroad Retirement Board in the form of promotional and educational campaigns among railway officers and high school and state labor authorities, and among the boys themselves, it is expected that the number to be employed this year will equal or exceed the number employed last summer. Last year, between May 1 and September 30, more than 23,900 boys hired out to the roads, and a considerable number of them continued to work on the track week-ends and holidays after the close of their vacation period.

No road has contended that it gets as much work out of the boys as can be accomplished by full-grown, experienced trackmen, but, on those roads where the boys have been given careful supervision and suitable housing and boarding facilities, or convenient daily transportation to and from their homes, they have produced effective results, both in extra gangs and in section gangs, in many cases comparable with those produced by the regular track forces. On this basis, road after road plans to employ high school boys during the coming summer, some in bridge and building and signal work, as well as in track work, and many of them are already engaged in their recruiting efforts.

Women Remain Few

As was expected from the first, the employment of women for track work has not assumed large proportions, although several roads have employed women track gangs quite successfully, especially within and about terminals. According to the latest figures issued by the Interstate Commerce Commission, in January, of the 114,199 women employees of the railroads at that time, only 1,589 were employed in roadway and structures work, outside of offices, this number including 768 classified as section laborers and 657 as extra-gang laborers. Women, however, are aiding the maintenance forces in other ways, directly and indirectly, not the least of which is their employment as cooks, managers or helpers in the camp car outfits of track and bridge and building gangs.

On the Union Pacific alone, it was announced recently, there are more than 50 women managers of outfit cars, with nearly 160 others sharing the work of their manager-husbands.

No progress has been made in the use of war prisoners or Japanese-Americans in track work, and only a relatively few of the more than 27,000 veterans who have accepted employment on the roads through the R. R. R. B. since April, 1944, have entered roadway and structures work. On the other hand, the employment of American Indians from government reservations has met with considerable success on at least a few roads in the West and Southwest, and it is expected that the number to be employed during the coming summer will range between 8,000 and 9,000, an increase of 2,000 to 3,000 over the maximum number employed at the time of their peak employment last year.

The Road Ahead

In the light of the foregoing, it is evident that the labor situation in the maintenance of way and structures department is far from solved, and that this department, faced with the largest programs of work in history, will be hard pressed during the coming months to keep pace with demands. However, full and intensive use of its record purchases of work equipment in recent years will stand its available forces in good stead, and there are reasons to be hopeful that, except for local situations which may continue or become serious, the labor situation as a whole in the department should grow progressively less severe now that Germany has been defeated.

War's Lessons Shape Motive Power Future

Three years of wartime operation have developed the facts that equip the railroad man to choose wisely from future developments in motive power

AT the risk of being considered premature we are going to venture the assertion that the railroads of this country have reached a stage in the handling of freight traffic, insofar as motive power is concerned, where the danger of failure to measure up to an enormous war-time job is remote. Let no one think for a moment that the job is done and we can settle back and take it easy. With the European war ending and the direction of war traffic shifting from the Eastern seaboard to the West coast we are now finding ourselves in the position of imposing a traffic burden of increased proportions upon transportation facilities that are already loaded to capacity. The next 12 months will probably provide the test that will demonstrate whether new operating methods and facilities that have been developed in the three and one-half years of wartime traffic handling are as good as they appear to be—whether they have the flexibility and capacity for further expansion if necessary. The fact remains that our transport machine has met everything that was asked of it and in the process of meeting these demands lessons have been learned which, if applied in time, can remove the danger of failure.

The statistical data in Table I are included again in this article because each time a few more months of performance figures are added there is being perpetuated a summary of an operating record that will serve as a guide to the policies of the future. One cannot help but marvel at the consistency of the motive power performance over a period of more than two years wherein a total freight locomotive inventory that has varied only between the narrow limits of 22,027 and 22,464 units has, by the process of effective and constantly improving utilization, been able to handle a traffic load reaching a monthly maximum of 144.8 billion gross ton-miles—34.4 billion more than the October peak of 1929—and has handled it with fewer freight locomotives.

Like most statistical summaries this one conceals effectively the cornerstone that has really held up the entire motive power structure—the 2,000 or more modern locomotives representing, as groups, on road after road, as little as 25 or 30 per cent of the inventory, yet operating as much as 50 to 60 per cent of the mileage. These are the steam locomotives built within the past 10 to 15 years with adequate boiler capacity, roller bearings and mechanical lubrication—major design factors that help to keep them on the road and enable them to handle tonnage trains at high speeds.



The Diesel Has Shown the Way

The term "modern locomotive" as applied to steam power has been used rather loosely; so much so that occasionally one pauses and asks what a modern locomotive is. It is not altogether a matter of age for there are new locomotives being built today that are not necessarily modern. More properly a modern locomotive should be considered one of recognized good proportions, with a boiler so designed that it has just a little more capacity than the maximum job that it will be called upon to do; it should be equipped with roller bearings and mechanical lubrication to all important working parts. These latter running gear improvements are factors of first importance in keeping locomotives on the road. An article which appeared in the May 12 issue of *Railway Age* contained actual performance data on roller-bearing-equipped locomotives on the Rock Island which showed, among other advantages, that the mileage between tire turnings alone had been doubled and one group of the 4-8-4 type made an average of 133,600 miles between tire turnings. When one considers the cost of dropping wheels and turning tires it is not difficult to translate these performances into terms of monetary economy.



Added to these are the growing numbers of Diesel-electric freight locomotives without which many roads admit they could not have kept up the pace. Back of these road locomotives are over two thousand Diesel-electric switchers, the work of which has been responsible for keeping yards clear and trains made up ready for movement. In 1944 the influence of a relatively small number of Diesel freight locomotives began to assume proportions, on many roads, where the overall performance statistics reflect certain definite changes that are taking place. Because the Diesels are new and because it is a high-first-cost facility it was but natural that the roads using them should segregate their costs and the records of their performance. The character of the Diesel is such that it is somewhat simpler to record the facts of its use than is the case with steam.

Table I—Selected Statistics of Motive Power and Freight Train Performance

	Total freight locos.	Unservice-able	Stored Serviceable	Active locos.	Per cent active to total	Loco. miles (000)	Gross ton-miles (000,000)	Freight train-miles (000)	Freight car-miles (000,000)
1929	1	2	3	4	5	6	7	8	9
October	28,912	4,417	2,680	21,755	75.3	64,756	110,444	56,748	2,785
1942									
February	21,841	3,238	916	17,687	80.9	55,030	100,489	48,030	2,341
October	22,027	2,344	340	19,343	87.8	70,461	141,880	60,717	3,155
1943									
January	21,974	2,509	352	19,113	86.9	67,152	126,930	57,966	2,790
February	22,048	2,629	297	19,130	86.7	62,962	121,919	54,246	2,660
March	22,075	2,676	282	19,117	86.6	70,103	137,148	60,344	3,028
April	22,030	2,585	283	19,162	87.0	67,524	134,882	58,295	3,001
May	22,067	2,593	364	19,110	86.5	69,491	141,453	59,801	3,131
June	22,096	2,595	376	19,125	86.5	66,071	132,549	57,110	2,959
July	22,083	2,471	406	19,206	86.9	69,311	143,568	59,758	3,151
August	22,031	2,677	395	18,959	86.0	69,296	144,817	59,711	3,183
September	22,107	2,666	355	19,086	86.3	67,680	140,771	58,373	3,110
October	22,037	2,703	335	18,999	86.2	70,084	145,076	60,355	3,185
November	22,205	2,740	308	19,157	86.2	66,448	133,356	57,338	2,937
December	22,259	2,601	315	19,343	86.8	67,433	133,254	58,325	2,918
1944									
January	22,351	2,666	310	19,375	86.6	68,927	137,118	59,489	3,020
February	22,341	2,808	307	19,226	86.1	66,547	132,795	57,367	2,913
March	22,291	2,609	264	19,418	87.1	70,993	142,638	61,306	3,165
April	22,265	2,814	341	19,110	85.8	66,868	137,350	57,832	3,043
May	22,316	2,783	436	19,097	85.5	69,279	144,110	59,894	3,167
June	22,199	2,682	498	19,019	85.6	66,136	138,663	57,179	3,044
July	22,253	2,804	495	18,954	85.1	67,478	141,533	58,315	3,115
August	22,334	2,707	493	19,134	85.7	68,149	144,163	59,067	3,157
September	22,388	2,758	462	19,168	85.6	65,106	137,172	56,329	3,002
October	22,938	2,796	465	19,137	85.4	67,498	143,539	58,855	3,155
November	22,457	2,895	483	19,079	84.9	65,095	134,164	56,463	2,961
December	22,432	2,857	430	19,145	85.3	65,492	129,119	56,974	2,844
1945									
January	22,414	2,911	342	19,161	85.4	65,636	127,440	56,885	2,768
February	22,464	2,949	370	19,145	85.2	60,896	122,608	52,747	2,654

The experience of the roads in compiling the performance data for the Diesel has, fortunately, demonstrated the value of learning more in detail about the use of steam power. The result has been that many past practices in steam operation have been shown up as uneconomical, and operating departments have not only made much better use of steam power but standards of performance have been established as improved objectives in the use of all motive power. Once again competition has served a valuable purpose.

Included in this article are two tables (II and III), the first of which shows the locomotive-mileage made by the three major types of power in use in this country, tabulated by districts. The second is a tabulation of performance data for a group of roads selected on the

Table II—Freight Locomotive Mileage (Millions)

Type of Power	United States				District					
					Eastern		Southern		Western	
	1944	Per cent	1943	Per cent	1944	1943	1944	1943	1944	1943
Steam	770.8	95.6	789.8	97.1	276.6	286.7	153.7	157.9	340.5	345.3
Electric	14.5	1.9	14.1	1.7	10.9	10.8	1.3	1.3	2.2	2.0
Diesel and other	21.6	2.5	9.5	1.2	3.4	1.9	4.6	2.6	13.5	5.1
Total	806.9	100.0	813.5	100.0	291.0	299.4	159.6	161.8	356.3	352.4

Note: Data From I.C.C. Bureau of Transport Economics and Statistics Statement No. M-211 (OS-A).

basis of geography, size and the fact that 10 out of the 17 roads included have 10 or more 5,400-hp. Diesel-electric freight locomotives.

Table III is not included here with any idea that definite conclusions can be drawn from a study of the statistics. Rather, it is used to show the improvement in freight train operation accomplished in 1944 as compared with 1943 on individual roads—both large and small. Before reference is made in this article to any of the figures in Table III it must be pointed out that the total freight locomotive ownership of the roads shown in the table is approximately 10,500—just about half that of the Class I roads—and that of this number about 1,200 are new locomotives, both steam and Diesel. By new, in this case, we mean built within the past eight to ten years and built new, either in the builders' plants or company shops—not modernized locomotives. We are not able to state conclusively just what influence these new locomotives may have had on the operating performance statistics of an entire railroad but we believe that it is sufficiently important to be a major factor in improved operations—definitely out of proportion with relation to the percentage of the new locomotives to the entire inventory.

Of just as much importance as efficient motive power in railroad operation is the matter of track and roadway facilities, signaling and CTC. Supervision and direction of improved operating, maintenance and servicing methods on the road, at terminals and in the shops—all have played a vital part in getting the most out of these facilities. Therefore, in analyzing the statistics shown in Table III it should be borne in mind that it is the collective result of the use of these facilities that produces these performance figures and that no single factor can safely be given the credit for the accomplishment.

Among the important indicators of the efficiency of freight operation are gross ton-miles per train-hour and gross ton-miles per locomotive-hour. The first is readily available; the second only in the records of individual railroads. The first appears in the last two columns of Table III. Since 1920 the Class I roads have shown a steady increase in gross-ton-miles per train-hour, from a figure of 14,878 in the year mentioned to 24,539 in 1929 and 37,294 in 1944. This average for all Class I roads is interesting by comparison with the same figure for some of the individual roads shown in the table. The 37,294 figure for 1944 is a 3.9 per cent increase over the year 1943.

Of eight railroads included in Table III that show percentage increases in gross ton-miles per train-hour for 1944 over 1943 greater than the Class I road average, the two roads with the greatest percentage of increase are both roads that have been unsually progressive in the matter of new facilities such as locomotives, roadway facilities and shop and terminal facilities. There may be some significance in the fact that both of these roads showed an 11 per cent increase and that one of the roads is the owner of the largest fleet of Diesel locomotives in the country and the other road operates almost exclusively with steam power. Once again we are forced to conclude that these overall statistics prove nothing if not the value of modern facilities—of whatever kind.

In order to bring out the value of these records a typical example of comparative performance of modern steam power and Diesel power is that of a western road that shows the following averages for a year's operation: gross ton-miles per train hour, steam, 29,747; Diesel, 52,985. Gross ton-miles per locomotive-mile, steam, 1,624; Diesel, 2,998. Train-miles per train-hour, steam, 13.55; Diesel, 17.67. This same road had a repair cost of 44 cents per mile for steam and 23 cents for Diesel. A substantial proportion of its steam power is of the articulated type. The Diesels are the 5,400-hp. type. A southeastern road, for comparison, operates modern articulated freight units, roller-bearing equipped, at a repair cost of 23.7 cents per mile.

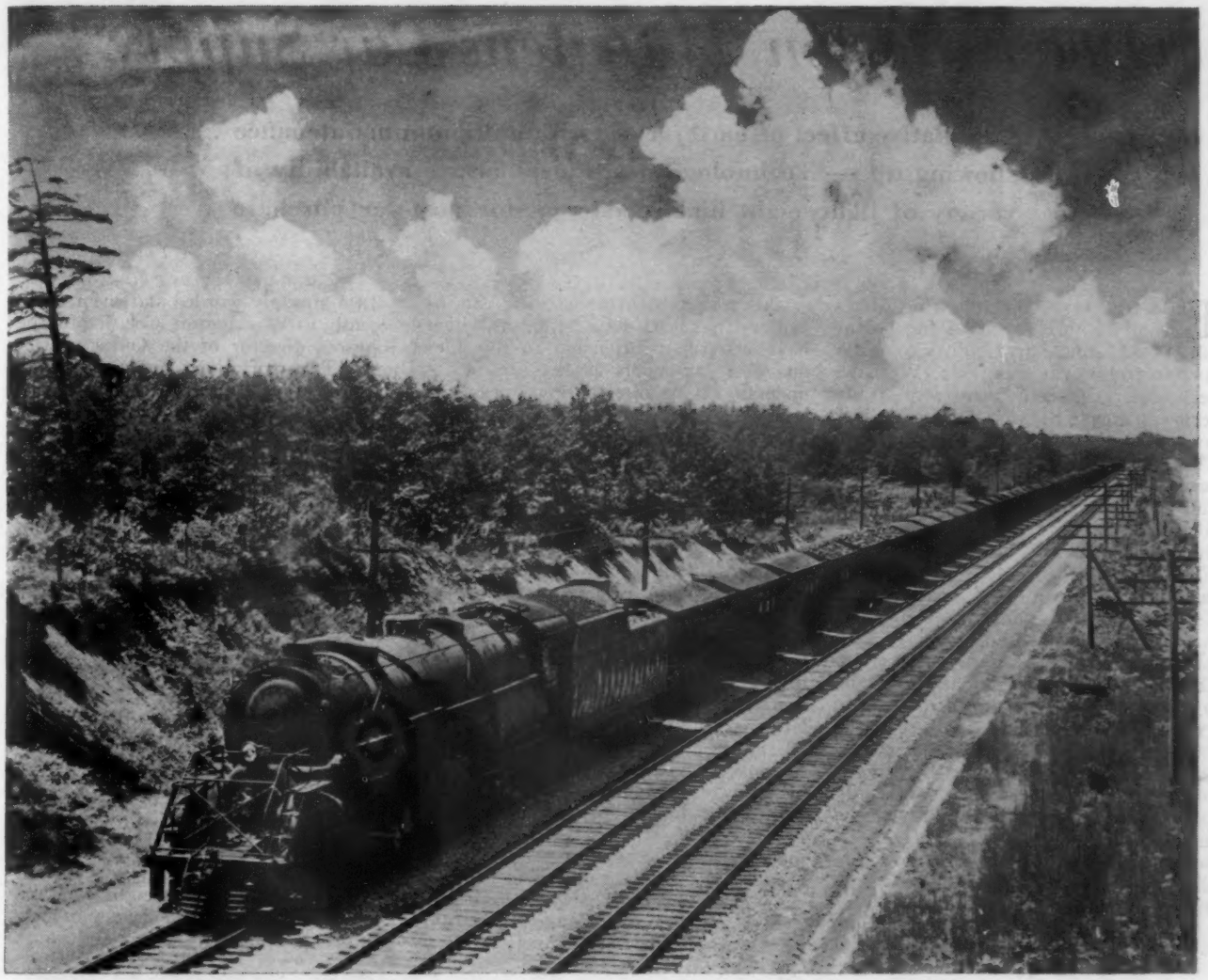
Another western road, operating in mountainous country, has made a study of the comparative costs of modern steam and Diesel power and its records for one year's operation with a group of articulated locomotives, part of which operate both in road and helper service, and a group of 5,400-hp. road freight Diesels shows some interesting facts. First of all is the matter of time distribution. Over a year's operation the steam locomotives made 700,000 miles and the Diesels 400,000 miles—the monthly average being relatively low in both classes of power due to the character of service. Of interest, however, is the fact that the steam power was in service 32 per cent of the time; at shop or terminals 46 per cent of the time; and available but not being used 22 per cent of the time. By comparison the Diesel power was in road service 59 per cent of the time; at shop or terminals 11 per cent; and available but not being used 30 per cent of the time. The comparison of gross tons per train showed 2,610 for steam and 3,325 for Diesel. The total operating cost per mile was $1.70 for steam and $0.82 for Diesel which totals included: repairs, steam 74 cents, Diesel 20 cents; fuel, 58 cents for the steam and 34 cents for the Diesel. Of especial interest is the fuel oil consumption of the oil-burning steam locomotive and the Diesel. The former used an average of 24 gallons of oil per locomotive-mile while the Diesel burned six gallons per locomotive-mile. The difference in the cost of fuel oil per gallon results in the steam locomotive fuel cost being 1.07 times the Diesel while the consumption is four times as much.

Future Promises Variety

In all of the more than 100 years of railroading there has never been a time when we have been so rich in the possession of operating experience and have had so many new types of motive power from which to choose for the future. Many persons related to the railroad industry have formed the rather narrow

Table III—Freight Operation Statistics for Selected Roads

	Train Miles (000)		Freight Loco. Miles (000)		Loco. Miles Per Train Miles		Total Gross Ton Miles (excl. loco. and tender) (millions)		G. T. M. per train mile		G. T. M. per train hr.	
	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943
B. & M.	4,637	4,956	5,754	6,508	1.24	1.31	10,968	11,285	2,373	2,287	36,591	33,858
New Haven	6,026	6,242	8,160	8,391	1.35	1.34	13,822	14,244	2,329	2,317	33,525	32,877
N. Y. C.	44,574	46,424	51,002	53,344	1.15	1.15	118,377	124,393	2,688	2,716	41,600	41,714
Penna.	57,087	57,136	75,117	76,071	1.31	1.32	156,541	155,282	2,830	2,802	37,182	36,205
Southern	26,319	25,571	27,357	26,525	1.04	1.04	38,391	36,531	1,480	1,451	24,717	24,708
A. C. L.	12,509	12,487	12,918	12,967	1.03	1.04	22,854	22,953	1,838	1,847	30,096	29,654
Seaboard	11,281	11,288	12,234	13,031	1.09	1.17	20,999	20,395	1,901	1,853	31,500	29,384
N. & W.	9,556	9,729	11,005	11,297	1.15	1.16	37,735	37,428	4,011	3,921	62,357	59,756
Santa Fe	40,673	36,693	45,941	42,332	1.13	1.15	97,597	83,232	2,417	2,284	42,994	38,840
C. B. & Q.	17,716	17,916	19,236	19,528	1.08	1.09	45,621	43,769	2,591	2,459	40,920	38,934
C. M. St. P. & P.	18,508	19,021	20,647	21,163	1.11	1.11	42,222	41,762	2,300	2,211	36,232	34,138
Gr. Nor.	15,357	14,713	16,017	15,297	1.04	1.04	41,766	39,170	2,739	2,685	41,480	40,411
So. Pac.	27,481	27,432	36,126	35,654	1.32	1.30	75,376	73,288	2,764	2,689	38,057	35,978
Union Pacific	36,733	36,353	42,524	41,746	1.16	1.15	89,653	85,209	2,472	2,371	46,470	41,940
West. Pac.	4,163	4,070	5,473	5,345	1.31	1.31	10,519	10,283	2,574	2,558	43,103	41,629
D. L. & W.	4,506	4,786	6,163	6,928	1.37	1.34	12,811	14,288	2,871	3,053	41,548	42,338
Lehigh Valley	6,599	6,036	8,375	7,736	1.27	1.27	19,970	18,069	3,130	3,085	49,327	49,242



opinion that we have reached a point where we must decide which is the best and most economical form of locomotive to use and build our future railroad structure around that type of facility. Nothing could be further from the truth, for with all the developments that are in prospect in the immediate post-war years the railroad man who decides to ride along with the motive power of today is in the same class as the individual who has already made up his mind that tomorrow's automobile or tomorrow's airplane will be but a duplicate of that which is being made and used today.

It may seem strange that of all the development work that is in process now almost none relates to the improvement of the Diesel-electric locomotive—it is being centered on the steam locomotive and the gas turbine. Possibly the Diesel has sufficient advantages over its competitors that it can center its attentions on the matter of reduction of first cost and postpone design refinements. That is exactly what happened in the case of the steam locomotive; so far in this century steam power has been faced with serious competition—first with electrification and now with the Diesel. In each case, however, the competition has resulted in an era of development that has brought new economies in railroad operation; that, after all, is the ultimate objective.

There is in prospect the possibility of new types of motive power in the field of steam and steam-electric turbine and the gas turbine; the split wheel-base designs such as the Pennsylvania's T-1 and Q-2 classes and, in addition, the major design developments dealing with the water-tube and welded boiler and such running-gear refinements as the light-weight roller-bearing rods which latter have been introduced but the full possibilities of which have yet to be realized.

Low axle loading is a major advantage that the Diesel has over steam. Weight distribution is important and the articulated and split wheel-base types have distinct possibilities in the matter of favorable wheel loads as well as the reduction of stresses on crank pins and running gear. The steam turbine of the type recently placed in service on the Pennsylvania not only has the advantages of high hauling capacity at high speeds but, because the reduction of running gear weight has made possible increased boiler capacity, the locomotive may be operated at high output with some increase in boiler efficiency. All turbine locomotives, whether steam or gas, have the paramount advantage of uniform torque with the attendant elimination of conditions prevalent in the reciprocating locomotive which are unfavorable alike to the track and the locomotive itself.

There is another development in the use of steam that shows signs of promise and that is the poppet valve. The effect of steam distribution by this means on steam economy and locomotive capacity will be more fully evaluated as soon as the war is over. It has been making progress during the war.

During the war the railroads have learned important lessons which have placed them in possession of operating and mechanical facts that are invaluable in guiding future policies. The next few years will be critical years when the pressure of competition with other forms of transportation may demand more study and effort than has the handling of wartime traffic. Manufacturers have shown the way to the future with a multitude of new ideas, and if the railroads will but explore these with an open mind and remain alert to the exploitation of future developments their ultimate success seems assured.

Deterioration Threatens Car Supply

Cumulative effect of hard service with minimum maintenance showing up — Technological advances insure availability of variety of lightweight high-speed cars for post-war purchase

FOR two years the following statement has been used as the beginning of this annual article discussing the current freight car situation: "We have been deferring equipment retirements seriously during the past two years when retirements have been far below normal. This means that cars have been kept in service which are not economical to run but which had to be kept going because replacements were not available. We cannot keep them running forever." The statement was made by L. M. Betts, manager, Railroad Relations Section, Car Service Division, Association of American Railroads, and can be repeated now as covering a four-year period. During 1944 and so far in 1945, the truth of this statement has become more evident daily. The terms "serious," "alarming," and "critical," have ceased to have meaning with reference to car supply. They have been used repeatedly and still, to all appearances, have been used incorrectly because the freight traffic of the country has been moved on time and in the volume needed for both military and civilian requirements.

Any close study of the car situation, however, will reveal that the movement of this traffic, with the existing car inventory, has been done by means which have no true relationship to the adequacy of car supply as it is ordinarily understood. Among these factors have been the combining of shipments and a lessening in the number of l.c.l. loadings; improved running times of trains between terminals; extraordinary shipper-receiver cooperation in speeding the loading and unloading of equipment; utilization of cars not fully adaptable to a shipper's needs; loading of cars to full axle limits; continuance of cars in service past the time when extensive repairs would ordinarily be made; an almost complete disregard of the costs involved in keeping vitally-needed equipment in service by patch-work repairs and maintenance. It appears evident that these possibilities for making an inadequate car inventory meet the traffic demands of the war years have been fully exploited and that the point has now been reached where, if the present traffic volume continues, and certainly if it increases, a serious situation will be created for which probably the railroads will have to take the blame although in many respects they are blameless.

In a strongly worded statement made recently in Washington, Col. J. Monroe Johnson, director of the Office of Defense Transportation, summed up the situation when he said, "I am convinced that unless there is an early improvement in furnishing man-power and materials, our transportation system will be incapable of transporting the ton-miles of freight in 1945 that it transported in 1944 and 1943. American transportation has been called the miracle job of this war but even miracles have limits and it appears that we have reached those limits."

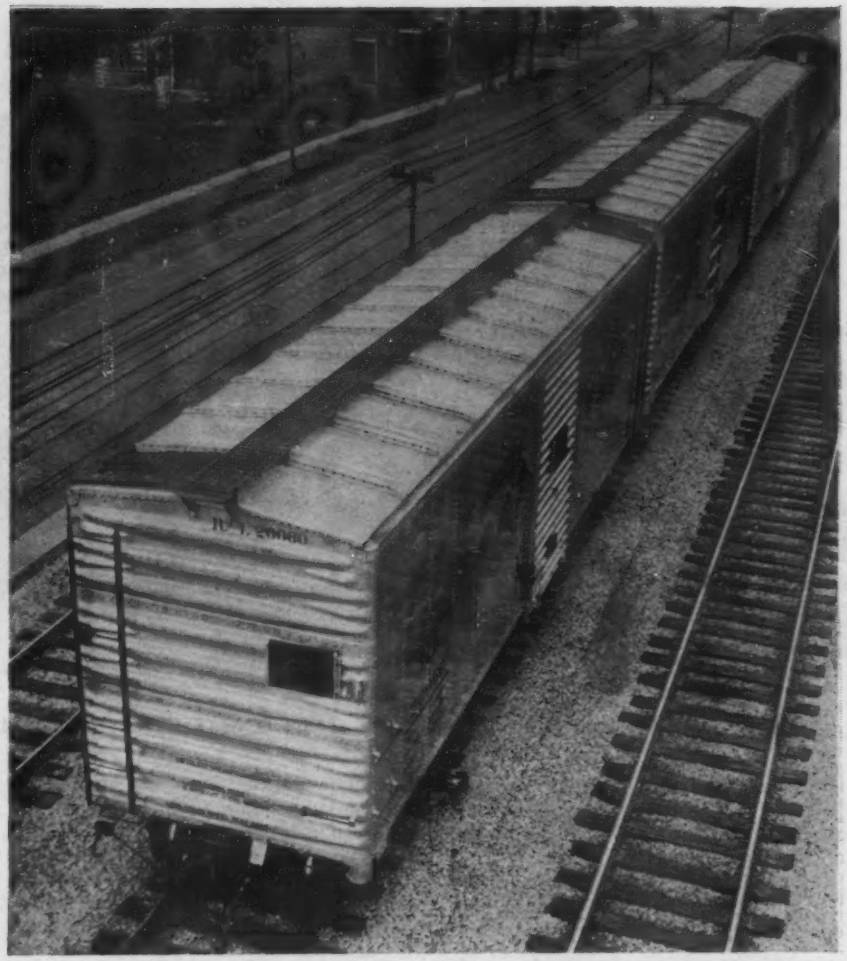
Equipment Deficits

In the same statement, Col. Johnson pointed out that at no time since the beginning of the war have the various allocating agencies of the government furnished the railroads with the new material and equipment which they require. According to his record, the new material and equipment obtained by the railroads since 1941 falls short of basic requirements by 185,000 freight cars and by correspondingly large deficits in locomotives, passenger-train cars and rail.



Great Northern 50-Ton, 40-Ft. 6-In. Plywood Box Car

It has been noticeably evident in the allocation of materials to the railroads that the miracle referred to by Col. Johnson has been relied upon rather blindly by the same authorities who loaded the railroads with high priority freight required for the conduct of the war. Although the general tendency where munitions and other war supplies are concerned has been to assure that an excess above anticipated requirements will be available, no such foresight has been evident with relation to the transportation medium required to insure that this excess will be at the desired locations when needed. As a result, although the war in Europe, for all urgent railroad traffic considerations, has now been concluded, we face the problem of handling military traffic required in the war with Japan and the heavy volume of relief materials which we have obligated ourselves to furnish Europe with a freight-car inventory insufficient in numbers and badly deteriorated in condition.



First Aluminum Box Cars Built at Mt. Vernon for the Alton, the Rock Island and the Minneapolis & St. Louis

Deterioration

Whether the same spirit of necessity and urgency which has dominated American industry, including the railroads, will prevail with the European half of the war finished is questionable. The false feeling of imminent victory in Europe last fall resulted in a marked reduction in output in many fields. Actual victory in Europe is likely to bring with it an opinion that more normal ways will suffice in production and distribution with only Japan to defeat. Any such relaxation will become apparent very speedily on the railroads.

One of the most serious problems confronting the railroads today is the deteriorated condition of freight-car equipment. This statement is difficult of statistical proof in the face of a bad-order condition report which is shown currently at about three per cent of total cars on the lines of American railroads. Since mid-summer of 1942 the condition report has averaged even less than this figure and it might be assumed that no problem at all existed. Whether the maintenance of this low bad-order ratio has had any effect upon the thinking of those responsible for the allocation of materials for new-car construction is not evident. On its face the figure indicates a healthy condition and the comparatively small allocations for new-car construction served adequately to replace cars which were dismantled or destroyed. With the statistical evidence showing that there are approximately 1,800,000 serviceable freight cars in the country today, some other source of information is required to support the opening statement of this paragraph.

The files of every car department head in the country contain numerous circular letters and requests issuing from the offices of the Mechanical Division of the A. A. R. relating to the maintenance of freight-car equipment. Among the more recent is one directing attention to the fact that many cars are being found arriving at terminals under load although they are in unserviceable condition because of defective floors or stringers; broken or corroded body bolsters; broken, bent or otherwise defective center sills; broken, bent or weak side sills; and broken or corroded crossbearers. Others have dealt with bad truck conditions, defective floors which have allowed ladings to fall through causing derailments, and required periodic attention to journal boxes and air brakes. A considerable number have been directed toward speeding repairs to tank and refrigerator cars and to the home shopping of such cars when heavy repairs are required. Taken together, over the period of the past year, the volume of these circular letters indicates that the condition of the freight cars in service is not accurately reflected by the low percentage of bad-order cars appearing on the semi-monthly reports submitted by the various roads.

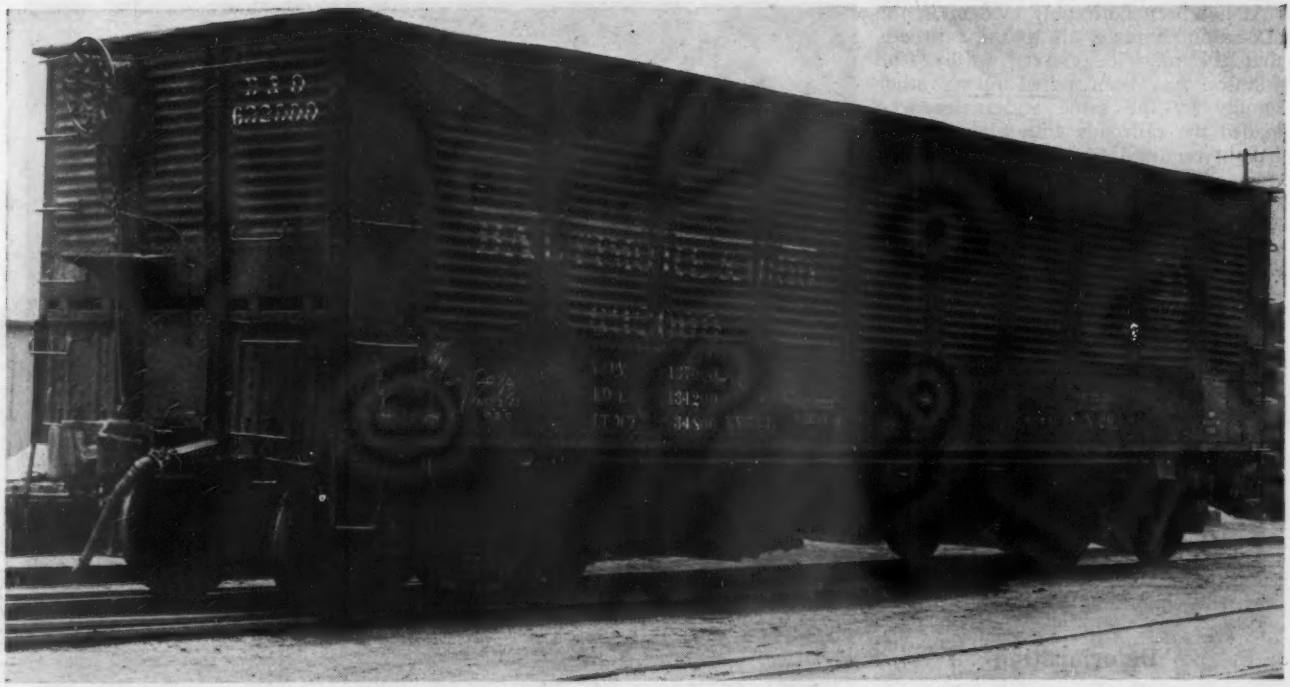
Standards of Measurement

It is important to point out in this connection that, so far, there is no evidence of any widespread unsafe conditions although the one circular letter of the Mechanical Division referred to above indicates how close to the margin are many of the cars being placed for loading. There is definite evidence that the standards of measurement of what constitutes a serviceable car have been revised downward and this fact is largely responsible for the relatively unchanged condition in the overall bad-order percentage. This depreciation, hidden in percentages where the base

Percentage Change As of March 15, 1945, in Bad-Order Car Position of Large Car-Owning Railroads from Corresponding Dates in Years Shown

	All Cars		Box Cars	
	1943	1944	1943	1944
New York, New Haven & Hartford	0.7	0.3*	0.8	0.5*
Erie	0.1	Same	0.2	0.5*
Lehigh Valley	0.1	0.3*	0.5	0.2*
New York Central	0.2	0.1	Same	0.5
Baltimore & Ohio	1.7	1.7	0.4	0.3
Pennsylvania	0.5	0.4	2.8	0.9
Reading	0.4*	0.7	1.5	0.8
Chesapeake & Ohio	0.5	0.1	0.2	0.3
Norfolk & Western	0.9*	1.3*	0.8*	0.1*
Atlantic Coast Line	1.7*	1.4*	1.7*	1.6*
Illinois Central	0.4	0.3	0.4*	Same
Louisville & Nashville	2.3	2.2	0.9	0.1*
Southern	1.0	1.1	0.7	0.8
Chicago & North Western	2.1*	0.2*	1.2*	0.7*
Chicago, Milwaukee, St. Paul & Pacific	1.0	1.0	1.2	0.8
Great Northern	0.3*	0.3*	0.1*	0.1*
Northern Pacific	1.8*	1.2*	1.1*	0.9*
Atchison, Topeka & Santa Fe	0.5*	0.8	1.2*	0.3
Chicago, Burlington & Quincy	0.1	0.4	0.9*	0.5
Southern Pacific	0.1	Same	0.9	0.2
Union Pacific	0.5	0.6	1.1	1.8
Missouri Pacific	Same	Same	0.5	0.3*

* Decrease.



Present Exterior Appearance of the B. & O. Car Built in 1934 of USS Cor-Ten Steel

of measurement has changed, may possibly be confusing those who anticipate that the railroads will experience no difficulty in transporting during 1945 a traffic volume as great as that of 1944.

Bad-Order Condition

As a way of estimating the possibilities for the remainder of the year it will be useful to study the bad-order position of various large car-owning roads with reference to their standing in 1943 and 1944. Of the twenty-two roads shown in the table, 14 showed a greater bad-order percentage on March 15, 1945, than they had in 1943; twelve showed a greater percentage than on the same date in 1944. The roads which showed a percentage increase in 1945 over 1944 own about 74 per cent of all cars in service. The situation with respect to box cars is about the same; thirteen roads show an increase in bad orders over 1943, and eleven roads show one over 1944. Those with an increase in 1945 over 1944 own approximately 72 per cent of all such cars.

To the extent represented in this tabulation the railroads are in a less favorable position to handle 1945 traffic. Since 1943, the March reports have shown the most favorable bad-order position of any month in the year on practically all roads and in the national averages. If the pattern of increase in unserviceable cars continues, there will be at least 60,000 cars unfit for service in July. Whether this time will correspond with the expected reversal of military traffic flow cannot be determined; if it does, car shortages of major importance will occur. Embargoes and other measures may be effective in preventing any tie-up of military supplies but the movement of important civilian supplies, including fuel and food, seems certain to be upset. With car surpluses so small now that they offer no cushion against any circumstance of weather or unusual demand, the physical condition of the car inventory may well, by the summer, become the determining factor in whether the railroads can carry their load.

Military Traffic Plans

Military and other government authorities have indicated that the cessation of hostilities in Europe will set into motion plans which have been made for concentrating our military strength against Japan. According to the announcements, this will call for greatly increased transcontinental movement by rail of men and supplies. Surveys have indicated that the Western railroads are prepared to handle this increased volume of traffic. Such surveys seem, however, to have taken into consideration only the motive-power capacity and the yard and track facilities of the roads, the capacity of which has been increased by improvements in yards and terminals, installations of centralized traffic control, etc. The limiting and possibly congesting factor appears most likely to be the lack of adequate repair facilities with sufficient man-power to keep unserviceable cars from accumulating to a point where the car supply, already seriously affected by increased turnaround time per car-trip, will be put badly out of balance.

As the table of bad-order figures indicates, the Western lines, as a group, show a general increase in unserviceable cars under present traffic conditions; any marked increase in traffic can reasonably be expected to give trouble. With car-repair points much more widely scattered than they are in the territory east of the Mississippi, and particularly so when compared with the area through which Atlantic-port-bound cars have moved, it cannot be anticipated that needed running repairs can be handled as expeditiously. The fact that cars are now in such condition that such repairs are needed in increasing numbers has already been pointed out.

Another factor which, if not followed closely, will cause trouble will arise if any considerable number of tank cars are diverted to western service from their present assignments. Eastern railroads in the terminal areas are again experiencing a marked increase in the number of tank cars which require repair-track attention. Most of the repairs needed are to trucks and draft gears and appear to result from wear and strain on these parts under the demands of high-speed service for which most of the cars were not built. Although the condition is not as bad as it was in 1943, when at least one major shop point was plugged completely and others filled almost to capacity with an accumulation of tank cars requiring repairs, it is attracting the attention of authorities concerned with the expeditious handling of oil movements. Diverting much of this equipment to western roads could have a crippling effect upon their efforts to keep all types of cars repaired currently.

Patchwork Repairs

The man-power situation and traffic trends are discussed elsewhere in this issue. The cumulative effect of wear and tear and the elements on the freight cars of the country is important in connection with each. So far a rather delicate balance has been achieved which

Age of Freight-Carrying Cars on Class I Railroads As of January 1, 1944

Years Old	Number of Cars	Per Cent of Total*
1 to 5	243,301	13.85
6 to 10	151,997	8.65
11 to 15	157,663	8.98
16 to 20	365,106	20.79
21 to 25	299,238	17.03
Over 25	539,329	30.7

* Total ownership 1,756,634.

permitted the railroads in 1944 to meet demands for freight movement without too serious delays. The outlook for the later months of 1945 is not bright, as more and more cars reach a stage where patchwork repairs will not keep them in service or where down-grading still further reduces the number of cars required to be in first-class condition for lading.

Freight-Car Developments

Although the existing situation does not appear favorable from the standpoint of maintaining an adequate supply of cars in good repair, there are, if the railroads can get over the hump, compensating factors in the fact that practically no new cars are being obtained currently. Limitations on the selection of materials for construction of cars being built now mean that, for most practical purposes, the cars are new in date only. The cars which must be built in the years following the war can be new in every sense. Various estimates have placed the number required at approximately 100,000 per year for at least ten years. Examination of the accompanying table will show that it would require more than five years, assuming a car retired for each new car installed, to replace only those cars which are presently more than 25 years old.

The obsolescence indicated by age in the table is, likewise, not truly representative. The deterioration which has been discussed actually has "aged" cars beyond their service years. Many of the cars which, taken by date alone, would normally be set up for heavy repairs require such extensive repairs or rebuilding that it is probable many of them will be dismantled and replaced with new equipment rather than subjected to normal heavy repairs. All of this points to a very active car replacement program after the war, at least during the years while railroad revenues remain at a sufficiently high level to justify expenditures for modern cars.

Although the new cars built during the war have not represented any advance in a technical or engineering sense, except for a few lightweight types for which special building permission was obtained and a series of box cars using plywood as a structural material, there have been developments which are of definite interest. The release by the Baltimore & Ohio of information concerning the ten-year service record of experimental lightweight cars built of a variety of materials*, provides certain factual data which car designers and builders are finding useful. Hearings before the Murray committee in the Senate brought into focus more clearly the possibilities for the use of the lightweight metals in freight-car construction. The witnesses generally were in accord in stating that the problem, to date, is primarily one of economics insofar as initial costs are concerned. At present it appears that a very considerable use will be made of aluminum and the low-alloy steels with straight-carbon and copper-bearing steels used where initial cost is the only determining factor in selection.

* See *Railway Age*, January 20, 1945, page 184.

Wheel-Shop Practices

The demand for head-end cars in passenger-train service has brought about the regular use of many box cars in these high-speed trains and the performance of the high-speed freight-car trucks used under some of these cars has demonstrated that the development of post-war equipment for high-speed freight service need not be hampered or limited, within present projected speeds, by truck inadequacies. Further improvements may occur however as the service mileage of high-speed freight-car trucks increases to a point where additional studies may indicate the desirability of change.

In the past year the Mechanical Division has shown increasing interest in the subject of wheel-shop practices on all roads. In some instances it has been necessary to take action to force the adoption of practices which meet the minimum requirements for proper mounting of wheels. When shop improvement programs are again undertaken on a wide scale, wheel shops will take priority on many roads. Their efficient tooling and operation will be of primary importance to roads which are interested in maintaining freight-train schedules calling for high speeds.

During 1944 the New York, New Haven & Hartford released information about the experiences which it had had over a ten-year period with a new design of journal bearing in both passenger and freight service.† According to its records the bearing resulted in a complete elimination of waste grabs on both freight and passenger equipment to which the new bearings were applied. Anti-friction bearing research has continued and it is anticipated that, after the war, a bearing assembly intended for use in the journal boxes of Bettendorf-type side frames will be introduced.

Cars After the War

Also important in the consideration of high speeds for post-war freight cars is the subject of braking. The manufacturers are prepared with a variable-capacity or load-compensating brake which will reflect differences in car weight and serve the very important purpose of providing more uniform braking forces throughout a train.

† See *Railway Age*, December 30, 1944, page 988.

Other angles of approach to the study of post-war freight cars are represented in two recent developments. In one a shipper group, the Fresh Fruit & Vegetable Association, undertook a study to determine what type of refrigerator car would best meet its needs after the war.‡ The result of this survey has been made available to the railroads and private car owners as a guide to what will prove satisfactory to the membership of the association which represents many of the largest users of this type of car. Pointing out that unlocated damage, probably due to hard riding, was responsible for most of the damage claims paid, the report suggested that new cars or those entirely rebuilt should have stabilized trucks, concentrically ground steel wheels, cushion underframes and soft action draft gears. For the rest, including the refrigerating methods employed, the Association indicated that it would be satisfied so long as the car owners kept abreast of technological improvements.

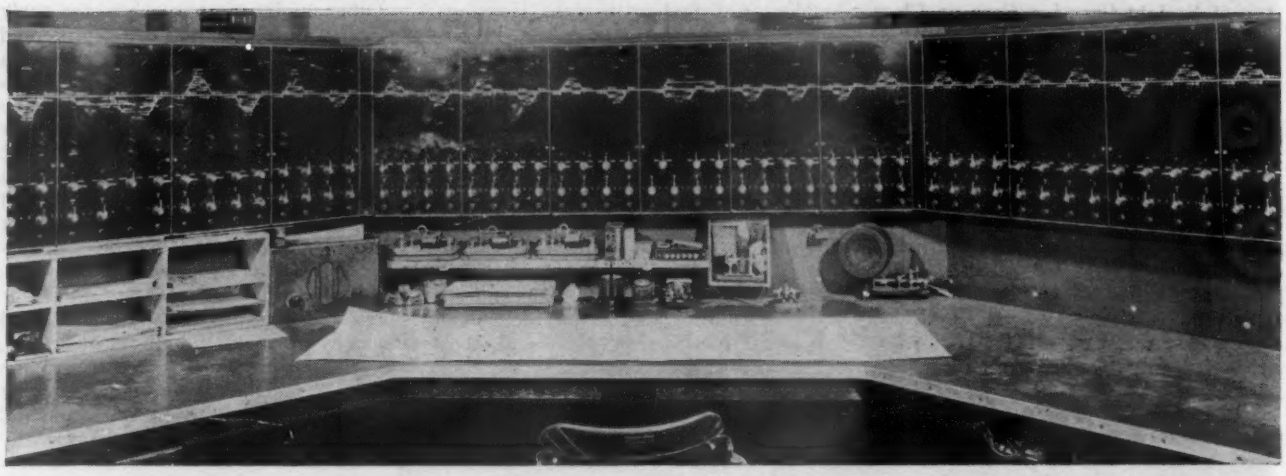
Research Program

The other development was a meeting at Purdue University at which representatives of railway material suppliers, the A. A. R. and the American Railway Car Institute discussed a program of research intended to furnish factual data useful in the design of modern railway cars. The discussions are said to have brought out the importance of utilizing recent developments in instrumentation and techniques to secure an accurate picture of the factors essential for the most effective utilization of different materials in modern freight-car design, and of the desirability of tests on complete cars. It is reported that this conference is expected to result in a research program of special interest to the railroads and those who supply the materials for car construction.

Future Is Bright

Although the unfavorable factors of obsolescence and deterioration make the immediate car-supply picture on the railroads look dark, there is another longer-range view in which these same factors assume a much more favorable aspect. After this war is over the railroads will not be burdened with a heavy inventory of comparatively new cars built under limiting wartime material conditions. They will be free to take advantage of the technological improvements which are available to them and will have a comparatively wide variety of materials from which to choose. They can, if they so elect, enter the post-war competition for freight traffic with cars adapted to shippers' needs, with cars which will meet the traffic departments' demands for high speeds and with cars which promise to require reduced maintenance and upkeep charges per ton-mile of freight carried.

‡ See *Railway Age*, February 10, 1945, page 304, and October 28, 1944, page 654.



This C.T.C. Machine, on the D. & R. G. W. at Green River, Utah, Controls 126 Miles

Signals Bring Benefits to Shippers

Modern centralized traffic control and train communication prevent delays while on the road, and car retarders reduce delays in classification yards

A SHIPPER, after loading a car, is interested in having that car delivered to the consignee as soon as possible. One of the most effective measures by which the railroads have been reducing the overall time of freight cars in transit during the past year is to minimize the time that otherwise would be lost by waiting on a siding on the road, or when standing in yards. These reductions in time have been brought about by modern signaling, such as centralized traffic control on the road and by car retarders in classification yards. A new system of communication, which is just now coming into prominence, consists of two-way voice communication between the head and rear ends of moving freight trains, between trains, and between trains and wayside offices, all of which have come to be known as the train communication system. The objective of all these modern systems of signaling and train communication is to keep the cars in motion a greater percentage of the time, at the speed for which the locomotives and tracks are designed.

Shipper's Viewpoint of C.T.C.

The conventional and long-standing means for authorizing train movements has been by timetables and train orders. Under this system, if any train gets behind schedule, train orders must be issued to authorize trains to move at variance with the timetable. As a result trains lose a lot of time needlessly when waiting on sidings, simply because orders cannot be changed fast enough to take advantage of changing conditions in the movement of trains.

The term centralized traffic control applies to a system including power switch machines at sidings and signals at these switches for directing trains to (1) continue on the main track to next siding; (2) enter the siding; or, (3) leave the siding and go to next siding. These signals, as well as the power switches, are under the control of a man sitting at a machine located in a central office, which exercises control over an extended territory, for example, 126 miles between Agate, Colo., and Helper, Utah, on the Denver & Rio Grande Western, or 300 miles between Caliente, Nev., and Yermo, Cal., on the Union Pacific.

Panorama of Traffic Flow

Diagrams on these C.T.C. control machines include lamps by means of which the man in charge can visualize the locations and progress being made by the trains in the entire territory. Based on this panorama of the flow of traffic, he can control the power switches and signals so that trains can meet and pass with little time lost; in fact, on many such projects where the sidings are considerably longer than the trains, about half the meets are made without either train being required to stop. On a busy single track division the time saved by this C.T.C. system averages from one minute to two minutes or more for each mile of the territory. A second item of importance to shippers is that centralized traffic control increases the capacity of a division to move trains when ready, thus preventing long delays in yards.

Traffic Expedited

The Missouri Pacific was a pioneer in the practice of authorizing train movements by signal indication on extensive sections of single track, the first such project having been installed in 1925 on a 50-mile subdivision between Leeds, Mo., and Osawatomie, Kan. This was the forerunner of what is now known as centralized traffic control, as discussed above. The Missouri Pacific now has 561 miles of track equipped with C.T.C., which is the maximum for any one railroad. On the 323-mile Arkansas division between Poplar Bluff, Mo., and Texarkana, Ark., C.T.C. is in service on 197 miles of single track and 39 miles of double track, with right-hand running, also by signal indication, on the remaining 87 miles. Because of the variations in traffic and changes in types of locomotives, direct comparisons are difficult, but operating officers have reported that the installation of C.T.C. on the 118 miles between MM Jct., Ark., and Texarkana, has effected an increase in the average freight train speed from 12 m.p.h. to 17 m.p.h., which saves 3 hr. 40 min. for each freight train.

Since 1927 centralized traffic control has been installed on numerous roads, but for purposes of illustration to the shippers as readers, this discussion will be confined primarily to examples of ex-

tensive projects included in long overall through routes.

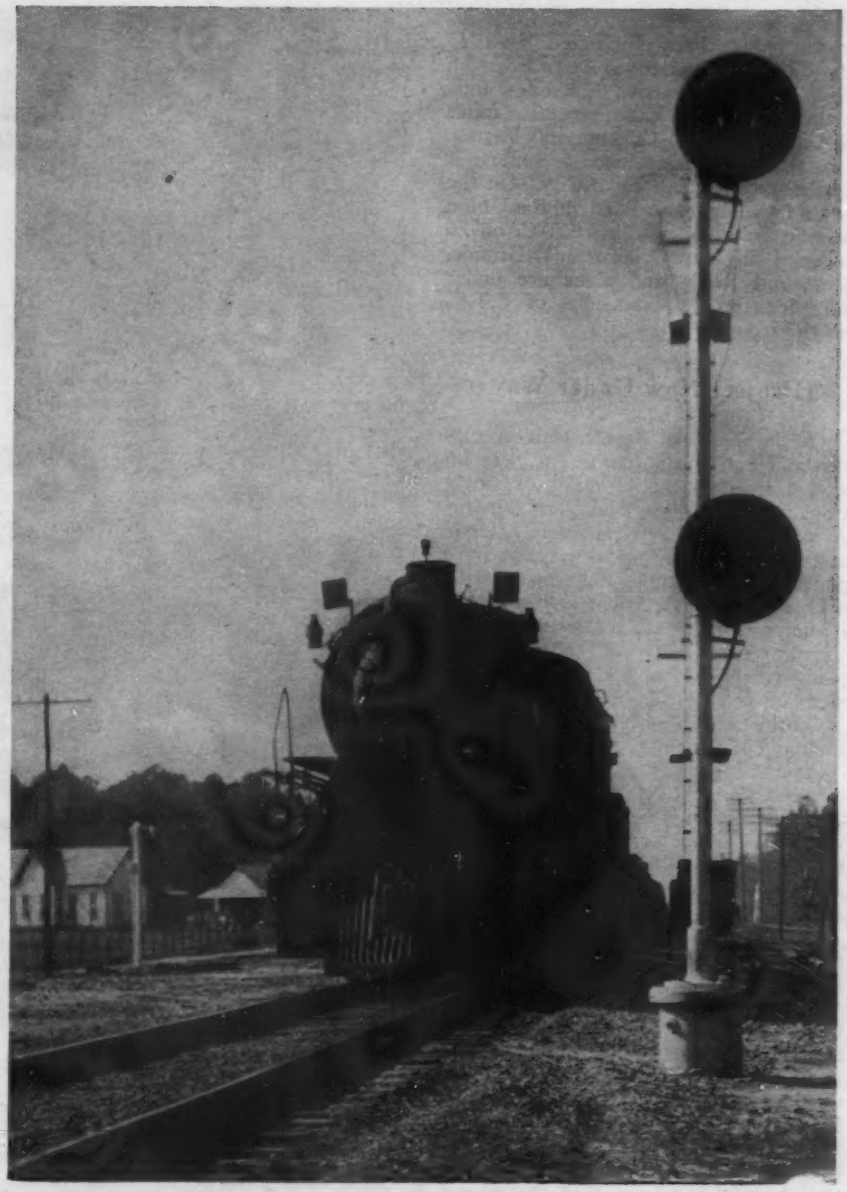
Burlington Was First

The Burlington was the first railroad to install C.T.C. on an entire engine district, this project, between Akron, Colo., and Denver, 112 miles, being completed in 1937. In 1945 the Burlington installed C.T.C. on 98 miles of this route between Lincoln, Neb., and Hastings, and other projects now under way extend between Hastings and Akron, 274 miles, a total of 483 miles of single track C.T.C. between Lincoln and Denver.

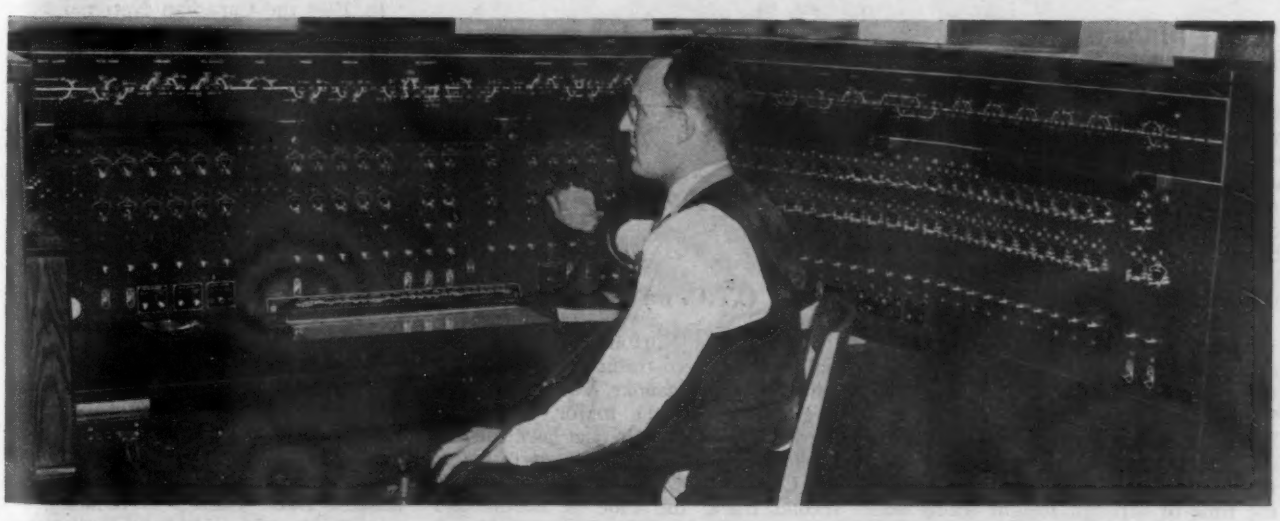
Other Installations

West of Denver on the Denver & Rio Grande Western to Salt Lake City, C.T.C. has already been installed on one continuous stretch of 286 miles of single track between Dotsero, Colo., and Helper, Utah, and C.T.C. is now being installed on 129 miles between Denver and Bond so that, with the exception of 38 miles between Bond and Dotsero, train operation by C.T.C. on single track or by signal indication right-hand running on double track will be in effect on the entire 570-mile route between Denver and Salt Lake City, by way of the Moffat tunnel.

West from Salt Lake City and Ogden there are four routes, the Southern Pacific and the Western Pacific to San Francisco, the Union Pacific to Los Angeles, and the Union Pacific to Portland, on certain portions of which centralized traffic control has been installed during the past three years, and more projects are under way or planned. For example in 1943 the U. P. installed C.T.C. on 171 miles of single track between Las Vegas, Nev., and Yermo, Cal., with the result that freight trains are now covering this 171 miles in either direction in less than 10 hr. as compared with anywhere between 13 hr. to 16 hr. or more before. Further, all the traffic is kept moving, the congestion and serious



The Kansas City Southern Has C.T.C. on 46 Miles Between Beaumont, Tex., and De Quincy, La.



C.T.C. Machine at Beaumont, Cal., on the Southern Pacific, Controls 72 Miles Between Colton and Indio

delays formerly encountered on this division having been eliminated. In 1945 the C.T.C. was extended eastward from Las Vegas to Caliente, 124 miles, thus making a total of 300 consecutive miles of C.T.C. between Caliente and Yermo. Plans are being developed to extend it further toward Salt Lake City. On the route from Ogden to Portland the Union Pacific, in 1944, installed C.T.C. on 76 miles of single track between LaGrande, Ore., and Reith, and plans are under way for further extensions of C.T.C. on this route.

Project Now Under Way

On the Southern Pacific, between Ogden and San Francisco, C.T.C. was installed in 1944 on 43 miles of single track between Vista, Nev., and Massie. A second project between Lamay, Utah, and Bridge is now under way, and the plans are to continue this construction until all the single track on this route is equipped with C.T.C. On the Western Pacific centralized traffic control is just being completed on a 116-mile subdivision between Portola, Cal., and Oroville.

On the Santa Fe between Chicago and Pacific coast points, centralized traffic control has been installed on 105 miles between Vaughn, N. M., and Belen, and the construction is being continued eastward to Clovis, N. M., thus including the entire main line of the Pecos division, 240 miles, between Clovis and Belen.

On the first section of this territory to be completed, 40 miles between Belen and Mountainair, where heavy grades are encountered, the average speed of freight trains increased from 14.8 m.p.h. to 24.5 m.p.h. westbound, and from 7.2 m.p.h. to 14.6 m.p.h. eastbound. On the line between Los Angeles and San Diego the Santa Fe installed C.T.C. in 1944 on 102 miles of single track between Fullerton, Cal., and San Diego. One benefit has been that the overall time of through freight trains has been reduced about 1 hr. 30 min., in spite of a large increase in the number of trains.

In the South, Too

On the route between Louisville and New Orleans, the Louisville & Nashville has several extensive installations of C.T.C.—for example, on the 178-mile engine district between Montgomery, Ala., and Mobile, C.T.C. which was completed in 1944 on 165 miles of single track. A comparison shows that freight trains are saving 1 hr. 24 min. southbound and 2 hr. 52 min. northbound.

In 1944 the Nashville, Chattanooga & St. Louis installed C.T.C. on 109 miles of single track and 4 miles of double track between Nashville, Tenn., and Stevenson on the route over the Cumberland mountains between Nashville and Chattanooga. With 12 passenger trains and about 50 freight trains daily, the time of through freight trains was reduced 1 hr. 45 min. and the time of passenger trains was reduced 19 min. In 1945 this railroad extended the C.T.C. north from Nashville to Bruceton, Tenn., 95 miles, thus totaling 208 continuous miles of C.T.C. between Bruceton and Stevenson, except for a short distance through the terminal at Nashville.



In C.T.C. Territory on the Western Pacific in California

The Seaboard Air Line has about 200 miles of line equipped with centralized traffic control, one section extending practically all the way from Richmond, Va., to Raleigh, N. C. Another installation 64 miles long extends between Savannah, Ga., and Thalman. This C.T.C. saves about one hour for each freight train operated over the 64-mile section.

C.T.C. on N. & W.

In 1943 the Norfolk & Western installed centralized traffic control on 84.8 miles between Roanoke, Va., and Stuarts Draft, which is the major portion of the 131-mile engine district between Roanoke and Shenandoah. As a result of the C.T.C. and a short section of new second track, the time of northbound trains over the subdivision was reduced from 7 hr. 18 min. to 6 hr. 14 min. For southbound trains, the time was reduced from 7 hr. 54 min. to 6 hr. 5 min., a saving of 1 hr. 59 min.

In Canada Also

In 1944 the Canadian National completed the installation of C.T.C. on 185 miles between Moncton, N. B., and Halifax, N. S. A study made on the 124 miles between Moncton and Truro for one month, before and after C.T.C. was in service, showed that the average overall speed of freight trains increased from 13.8 m.p.h. to 18 m.p.h., thus decreasing the overall time from approximately 9 hr. to 6 hr. 54 min., in spite of the fact that 115 more trains were operated in the period with C.T.C. Also the net ton-miles increased from 62,932,913 to 77,350,643, or 22.9 per cent.

Numerous other railroads, such as the Boston & Maine, the Rock Island, the Milwaukee, the Texas & Pacific, the Nickel Plate and the Erie, all have extensive installations of C.T.C. Thus on many routes between distant cities centralized traffic control is reducing the overall time of freight between the ship-

per and the consignee at the average rate of more than one minute for every train on every mile of C.T.C. territory.

Reducing Delays in Yards

At terminals and various intermediate points the railroads have gravity type yards to separate cars which are to go to different destinations. The old-time method of operating these yards was to have men throw the switches leading to different tracks, and to have a man ride each car or "cut" of cars to apply the brakes to control the speed down the hump and through the switches. In 1924 devices known as car retarders were developed to control the speed of the cars in yards, and power machines were applied to operate the switches.

These car retarder systems have been installed in 43 of the more important freight classification yards in the United States, and the result has been to reduce the time required for cars to pass through these yards.

Power Switches and Retarders

The capacity of a classification yard is limited by the speed at which cars can be pushed over the hump, which in turn is limited by the time required to operate the yard switches and to control the speed of cars when passing down the hump.

All these operations can be coordinated to a high degree of efficiency in a yard where the power switches and car retarders are in service. Furthermore the increased operating speed is available at all times.

As a means of saving time for the shippers' freight, the benefits of car retarders are measured by the ability to classify all trains promptly upon arrival. This operation is practicable with power switches and retarders, because only a few men are required as compared with the use of switchmen and car riders, a consideration of unusual importance in a time of man-power shortage.

The 43 large yards equipped with car retarders are distributed over the United States so that on many routes these yards serve to cut hours from the overall time of freight between the shipper and the consignee. An officer of one road which has four yards equipped with retarders has stated that there is approximately 25 per cent faster operation with retarders as compared with manual operation. As an example, in a car retarder yard a train of 110 cars with an average of 1.4 cars per "cut" was classified in 23 minutes, or at the rate of 5.2 cars per minute, with a humping speed of 2.6 m.p.h. Under more favorable circumstances, with reference to more cars per "cut" and a small percentage of loaded cars, the average speed may be increased to 3 m.p.h. or more, and the important point is that this operation can be continued at this rate without interruption as long as there are trains to classify, without waiting for riders to return from the classification tracks to the hump. This saves anywhere from two to ten hours or more for each car passing through any of the important gateways.

If the power switches and retarders had not been installed in the 43 yards prior to this war, it would now be impracticable to employ enough trained switchmen and car riders to handle the traffic; therefore, the yards would be as congested as they were during World War I, whereas today the cars are moving through these yards promptly.

Yard Communication

When a yard locomotive is pushing a string of cars over a hump, wayside signals, such as semaphores, can be controlled by the humpmaster to direct the engineman to stop, start, increase speed, or reverse. During storms or fogs these signals may be obscured, thus hampering operations.

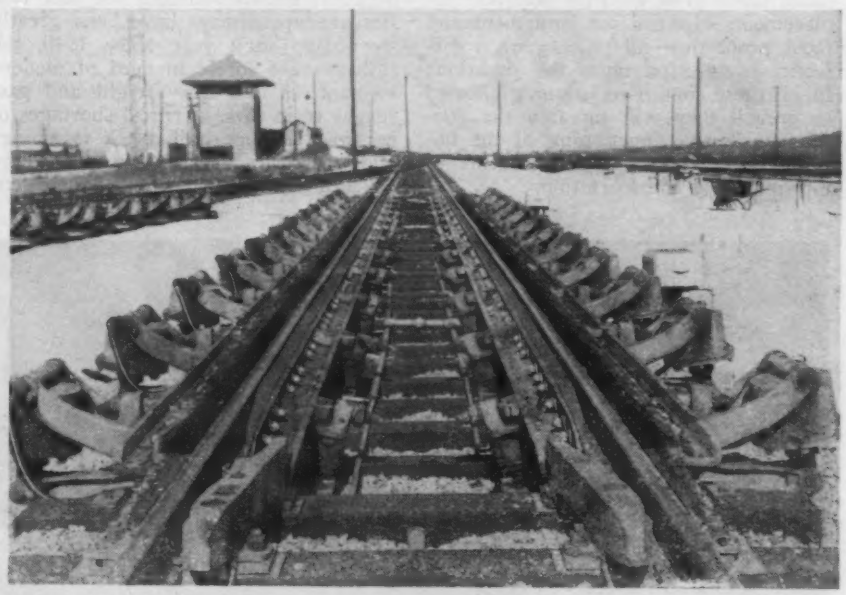
In 1940 a system of telephone communication was developed so that the humpmaster could talk to the engineman, and later this was improved to provide for conversation in both directions.

This system has been applied in many of the car retarder yards and has proved to be an aid in operations. Communication installations have also been made in the past year between yard offices and switch engines in terminals.

Train Communication

The term train communication is applied to equipment which permits two-way telephone conversation between men on the locomotive and in the caboose of freight trains, or between either of these vehicles and wayside stations along the road, as well as between different trains. Although the inductive and the radio systems of train communication have been tested and developed at various times during the past 20 years, it was not until 1944 that the inductive system was developed for practicable use extensively on main lines, and, also in 1944, due to the war-time development of high frequency radio apparatus, it was possible for the Federal Communications Commission to assign 33 wave channels for train communication.

During 1944 and the early months of 1945 numerous railroads have made test installations to secure information concerning the train time which can be saved by train communication under varying circumstances. When a train is made up and the locomotive coupled, the brake line air pressure must be pumped up on the locomotive until a given pressure is registered on a gage in the caboose. With train communication, the conductor can tell the engineman when this pressure is up to normal, so that the train can depart. Without this communication, hand signals have to be passed from the rear to the head end, and, where the view is restricted, considerable time may be lost even to the extent of a trainman being required to walk to the front end. If the men in the caboose see a hot box or a dragging brake beam, the only way they can stop the train is to apply the air brake in the caboose, which, since the locomotive continues to work steam, may cause the train to be pulled in two. With train communication, the conductor can telephone to the engineman, enabling him to stop the train without hazard. As recorded in the log of numerous test trips on various railroads, train communication is effective in reducing the extent of time which otherwise would be lost. As considered from the viewpoint of the shippers, train communication applied extensively during the next few years will be a means for improving on-time deliveries of freight.



Car Retarders Such as This Save Many Hours for Freight Cars When Passing Through Yards

Too Little . . . But Not Yet Too Late

Seriously handicapped by governmental controls, American railways need an immediate transfusion of more material, equipment and supplies to restore badly worn facilities

ALTHOUGH it is anticipated that some additional materials soon will be released for the building of sorely needed railway equipment and for the rehabilitation of railway facilities, the war-time transportation record of American railways is all the more remarkable because of the stringent governmental control of needed equipment, materials and supplies that so long has been maintained. That record also has been achieved with a further handicap of 600,000 fewer freight train cars, 22,000 fewer locomotives and 15,000 fewer passenger train cars than American railways possessed during World War I.

At one time a feeling of complacent assurance was manifest in some railway circles regarding the ability of the railways of this country to maintain their leadership in national transportation during the war and afterward in an era of unrestricted competition. However, the continued stringent control of equipment, materials and supplies; the fact that, according to persuasive estimates, the railways are wearing out 25 per cent faster than they are being restored under present conditions; and the added fact that the railways are not allowed to put aside from current revenues adequate funds to be used for post-war replacements of worn out equipment and fixed properties—all place quite a different complexion upon the situation; for, if these conditions are long allowed to prevail they will threaten the continued effective functioning of the nation's only large-scale and all-community means of transportation.

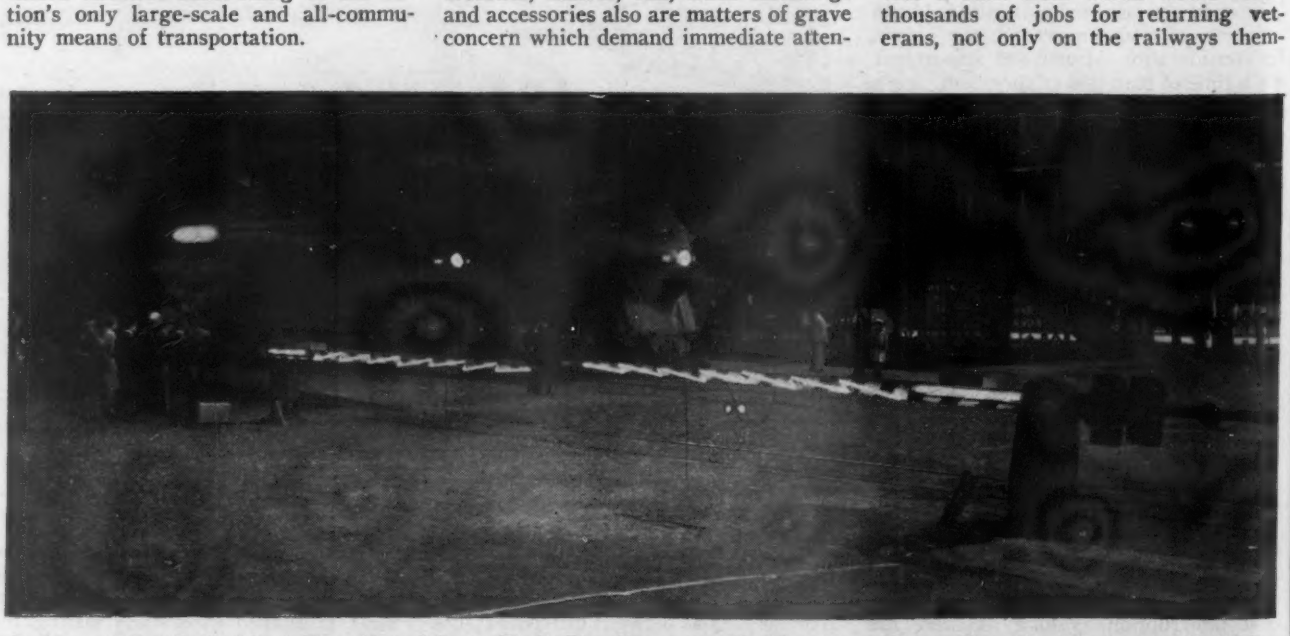
America knows that Germany's military defeat was brought about in large measure by the inadequacy and failure of German railways because of insufficient maintenance and continued bombing. At the beginning of this war America's railways generally were in good physical condition; for this very reason they have been a major factor in America's military success. With the advent of Allied victory in Europe, it behooves our governmental agencies to make certain that America's railways are provided with sufficient materials, supplies, equipment and labor that railway managements may rebuild and renew their facilities so that again there will be no question of the adequacy of railroad transportation for the war on Japan or any future emergency.

Tax Amendment Needed

Notwithstanding the fact that purchases of materials and supplies from manufacturers (excluding new locomotives, cars and fuel) by Class I railroads in 1944 amounted to $1,024,697,000, or 18 per cent more than in 1943, and the greatest amount spent for manufactured products in any year in the last two decades; notwithstanding the fact that similar expenditures have been greatly stepped-up each year since 1940, the railways are sorely in need of modern locomotives and new freight and passenger train cars. Critical shortages of crossties, lumber, rail, track fastenings and accessories also are matters of grave concern which demand immediate attention if railway rolling stock and fixed properties are to be adequately maintained to handle traffic for the Japanese war and in preparation for any other emergency.

Because of the nature of the present tax laws the railroads are not permitted to put aside from current revenue money for post-war replacements of their rolling stock and fixed properties which now are being worn out probably faster than at any time in their history. Because of stringent government control and allocation of materials and supplies, because the railways are still considered in the civilian category with requests for new materials subject to corresponding reductions, because more than 300,000 railway men in military service have sorely depleted railway man-power, many of the needed repairs and replacements, of necessity, have had to be postponed.

In the face of this situation the present tax law makes it impossible for the railways to set aside adequate sums, from current revenues, that should be spent for maintenance and that normally would be so applied. A congressional amendment to permit the railways to set aside money for repairs and replacements would not only assure general rehabilitation and strengthening of the railroads the better to handle traffic to the Japanese war theater and to meet any emergency that might arise in the post-war period, but it also would provide a fund from which would result thousands of jobs for returning veterans, not only on the railways them-



Railways Effectively Adapt New Materials to Their Requirements: Flashing Neon Lights Give the Effect of Red Chain-Lightning and Provide an Efficient Warning Signal for Highway Crossing Protection on the Norfolk & Western at Roanoke, Va.

selves but also in manufacturing plants producing railway equipment, materials and supplies.

Soviet Gets U. S. Equipment

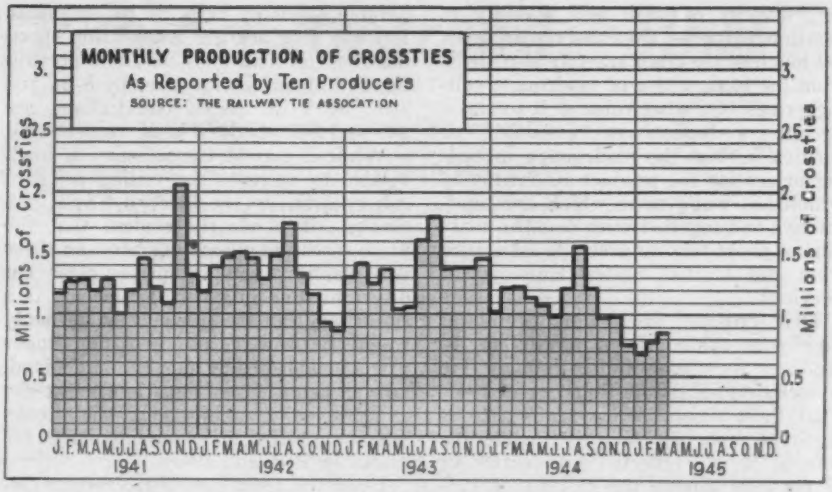
Although the beginning of 1945 found the railway material situation generally easier than at any time in many months, procurement officers were faced with many problems which were accentuated and intensified during the first quarter. It is significant that during the period from January, 1944, to mid-April, 1945, United States aid to Russia in helping to solve the critical transportation problems resulting from the vastly extended supply lines of the Soviet armies involved the shipment of 1,355 steam locomotives, 50 Diesel-electric locomotives, 9,272 flat cars, 1,000 dump cars, 100 tank cars, and 24 heavy machinery cars. That these shipments were made possible in part by slashing materials requests of American railways is reflected in a recent announcement by the director of the Office of Defense Transportation in stressing the tight equipment situation, to the effect that the O. D. T. as claimant agency for railroads had thus far been allocated materials for 187,000 fewer freight cars than it had requested from the War Production Board.

Primarily because of inadequate ceiling prices and discriminatory O. P. A. regulations in favor of the production of lumber, crosstie production has been allowed to slump so that the downward trend which began last August not only has assumed alarming proportions but, unless prompt action soon is forthcoming, the railways also will be faced with serious tie shortages.

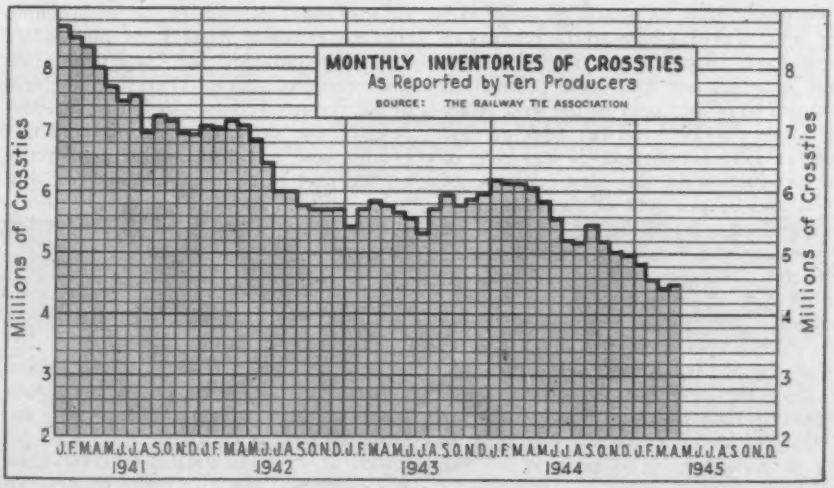
Lumber is tighter than ever, but under the steadying influence of W. P. B.'s Order L-335, complete control and proper channeling has given the railways a working supply of the grades, species and sizes that they require; shortages in 1-in. and 2-in. boards present definite problems with regard to the renovation and repair of buildings and cars; and, although timber scarcity has interfered somewhat with bridge and structural work, apparently the critical stage has not yet been reached.

The upward revision of material requirements for the European war theater brought many changes in the availability of aluminum, copper, brass and steel products during the past four months. About the latter part of February the deepest cut in civilian transportation equipment programs since the last quarter of 1943 was announced by the O. D. T. This agency's claims for controlled materials for the second quarter of 1945 were slashed to the bone when the W. P. B. advised the O. D. T. that its second quarter program calling for 1,527,000 tons of carbon steel had been cut to an allocation of 1,065,000 tons, a reduction of approximately 30 per cent and well below the allocation of 1,254,838 tons for the first quarter.

While shortages of some items of materials and equipment still complicate matters, although not to the extent of tying up needed locomotives and cars, control measures generally are functioning smoothly, except that the railways are not receiving adequate quantities of such basic items as rail, track fastenings and accessories, frogs, switches and crossings, signal equipment, power tools and work equipment. Procurement officers generally are faced with the perplexing question of whether to convert as much cash as possible into materials for later use, as an offset against probable price increases or whether such action would be worth the risk of deterioration and obsolescence in view of the probability that many hundreds of older locomotives will be taken out of service and scrapped along with thousands of older cars once the recession of war traffic generally is established.



The General Downward Trend in Crosstie Production Is Emphasized by a Drop of 34 Per Cent in the First Quarter of This Year Compared with the Same Period of 1944



Crosstie Inventories Now Are Near the Lowest Point for the Last Five Years

Grave Lag in Tie Production

Although it was near the end of last February that Col. J. Monroe Johnson, O. D. T. director, announced that the O. D. T. was seeking the assistance of other governmental agencies to increase crosstie production, the intervening months have brought only two minor moves from those agencies while first quarter tie production for 1945 dropped 34 per cent below that for the same period last year and producers' inventories are near a new low for the past five years. The War Manpower Commission has classified the production of crossties, including cutting and handling to concentration points, as a "critical activity" and preservative treatment as an "essential activity." Although the O. P. A. is well aware of the fact that a general survey conducted among practically all the producers east of the Rocky Mountains, by the Railway Tie Association, reflected a reduction of 47 per cent in January-February, 1945, production compared with the same period last year, up to the time of this writing, O. P. A.'s action has been confined to re-establishing purchasing commissions for part-time agents of railroad tie contractors.

True it is that falling production has been caused by the disparity between the ceiling price of crossties and lum-

ber, scarcity of labor and inability to obtain new trucks, tires and repair parts, but much of the labor scarcity also stems from the basic cause of inadequate ceiling prices. Of what value is it to classify tie production as "essential" or "critical" when the inadequacy in ceiling prices for the product automatically establishes wage rates which are unattractive and together with doubtful margins of profit tend to preclude assistance from the United States Employment Service?

That crosstie production is falling rapidly is evident from reports of 10 producer members of the Railway Tie Association for the first quarter of 1945. That these figures are conservative is apparent from the fact that while the general survey reflected a reduction of 47 per cent during the months of January and February, 1945, compared with the preceding year, reports of the 10 producing companies whose records have been maintained for many years, show a corresponding reduction of only 35.5 per cent. Turning now to the returns of these same 10 companies for the entire first quarter, we find that production dropped to 66 per cent of the first quarter totals for 1944, 58 per cent of first quarter 1943 production, 57 per cent of the production in the same quarter of 1942, and 62 per cent of the first quarter production in 1941.

Using these figures as a barometer and considering the various factors entering into crosstie production as evidenced in the annual production for the years 1941-1944 inclusive, and if crosstie production is allowed to dawdle along as it is, the best that the railways can expect is that the total production for 1945 will approximate 60 per cent of the average annual production for the last four years.

Crosstie Stocks Near New Low

Crossties held in stock by manufacturers and wood preserving plants also reflect a serious picture, for the same 10 companies reported that on April 1 their total inventories of crossties amounted to 74 per cent of the quantity held in stock on April 1, 1944, 77½ per cent of the 1943 inventory, 63½ per cent of the 1942 inventory and only 56 per cent of the total inventory of April 1, 1941.

Further analysis shows that the present ceiling prices for crossties, which were established in December, 1942, represent an increase of approximately 10 per cent over March, 1942, prices and for oak these range from $1.15 to $1.60 through eight production zones and four grades of ties. That means, for instance, that in Zone 3 prices of oak crossties range from approximately $32 to $38 per M f. b. m. These prices have remained stationary while discriminatory prices have since been established for oak timbers of "Sound and Square Edge" grade. The National Hardwood Lumber Association specifications for S&SE oak timbers are comparable in many respects to American Railway Engineering Association specifications for oak crossties, but prevailing ceiling prices for 6-in. by 8-in. and 7-in. by 9 in. S&SE oak timbers are $45 and $47 per M f. b. m. respectively.

While it may be unnecessary or inadvisable to increase the ceiling price of oak crossties to the level of S&SE oak timbers, it is clearly evident that the price spread now existing between these two classifications comprises clear cut discrimination in favor of lumber. As a result much of the timber that normally would be sawed into crossties under prices established by supply and demand, now is being sawed into lumber at the expense of dwindling crosstie stocks which presage under-maintenance for tracks in 1946 and 1947.

Even the most optimistic reports indicate that we may expect lumber to be decidedly tight for months if not years after the end of the Japanese war. In face of the impending building boom throughout the country, it is probable that government regulations on lumber may be maintained for some time after the coming of peace. Therefore, in view of all these circumstances, the seriousness of the crosstie situation demands prompt and effective action principally on the part of the O. P. A. in revising price ceilings upward to provide necessary incentive to re-establish production at more nearly normal levels.

Severe Cut-Back in Rail

It was in accordance with the severe cutbacks of the O. D. T.'s second quarter program that replacement rail, the most important railroad item, was reduced from a requested 600,000 tons, representing the entire controlled-cooled mill capacity, to an allocation of 417,000 tons for the railroads and 11,000 tons for transit lines because of increasing military demands for steel billets and artillery shells. O. D. T.'s second quarter request for 300,000 tons of track acessories, such as tie plates, joint bars, bolts and spikes, was pared down to 209,000 tons for the railroads and 5,000 tons for the transit lines.

At the same time 250,000 tons of carbon steel requested for railway freight cars (sufficient to build approximately 13,500 cars) was reduced to 135,000 tons, or enough for approximately 7,500 cars. It was not until the early part of April that the O. D. T. revealed that 34,000 tons of carbon steel had been turned back by the army from its second quarter quota for the production of 2,000 vitally needed box cars in order to assure the scheduled production of 20,000 box cars during the first nine months of 1945.

O. D. T.'s passenger car program for 1945 which called for an average of 250 cars for each quarter of the year was disapproved entirely by the W. P. B., except for the allotment of 252 tons of steel for the manufacture of 15 baggage and mail cars.

Allotments for carrying out the O. D. T. program for locomotives provided for 30,000 tons of carbon steel.

Alloy steel, which plays such an important part in transportation, was reduced from 134,000 to 98,000 tons in its allocation and the complementary amounts of copper and aluminum were allotted in accordance with the new downward revision of steel.

With the war production cut-back which preceded the fall of Germany and which may be expected to increase at a greater rate than originally forecast because of the modifications in military requirements, the prospect of additional steel, aluminum, copper and brass for railway materials and supplies seems good in the near future. However, potential demands for American equipment, materials and supplies for rehabilitation abroad should not be overlooked in the reconversion picture for, in addition to inquiries for 30,000 freight cars for France, the prospects are that additional inquiries may be received for 10,000 freight cars for Belgium and 6,000 for India.

Research Points the Way

The last few years have brought ever-increasing interest in research both on the part of the Association of American Railroads and by individual railways as well. For example, a thorough study of the economics of weight reduction in rolling stock is being conducted under the auspices of the A. A. R. That this is particularly significant is shown by statistics of the American Railway Car Institute which reveal that 539,000 or approximately 31 per cent of the freight cars owned by Class I railroads are more than 25 years old and an additional 17 per cent range in age from 21 and 25 years. This research project opens up many possibilities, not only for the lightweight metals, but the low-alloy high-strength steels as well. Broader interest in research by American railways undoubtedly will have considerable influence in promoting the adaptation and use of the many new materials, products, machines and processes that have been developed during the war.

Equally interesting, and fully as prophetic of the progress that may be anticipated along this line as soon as the removal of war regulations will permit, is the new $1,000,000 program for steam locomotive development. Sponsored by six railroads and three coal companies, this research aims at increasing the efficiency of American locomotives through the use of powdered coal, the development of steam turbines and the application of new steam power principles. These are but two of the more prominent examples indicating the spirit of determination which permeates railway management and which doubtless will be reflected in the widespread adoption and use of new materials, new equipment and supplies to further increase the efficiency of railroad transportation, particularly during the competitive period which will return when the war ends.

Better Fixed Plant a Railroad "Must"

Examples of actual improvements, and the results obtained, show what can be accomplished in the way of reducing costs and promoting improved service

IT HAS never been possible for a business enterprise to compete successfully without an efficient, modern plant in which to manufacture its product. So it is with the railroads. Their product is transportation service and their plant is, in large part, the fixed properties that they must provide and maintain in order to produce this service. Competition in the transport field, intense and aggressive before the war, is certain to be much more so when the war is over. Obviously, the railroads cannot, and do not, expect that they can achieve any great measure of success in meeting this competition without a fixed plant that is completely up-to-date in every respect, and it is toward the provision of such a plant that a great deal of thought and planning are now being directed.

As a factor in determining the cost and efficiency of railway service the fixed properties are at least as important as any other single element. Train speeds and tonnages, for instance, are dependent to a large extent on the standards of construction and maintenance of the tracks and bridges. The rapidity with which shipments are handled is a function of the adequacy and efficiency of the car and train-handling facilities at yards and terminals and out on the line. Train schedules and operating costs are directly related to the speed and efficiency with which locomotives can be serviced and repaired, both at terminals and at intermediate points. Finally, the cost of the service rendered is influenced materially by the degree of economy with which the roads are able to maintain and operate their fixed properties. These are some of the reasons why shippers are vitally interested in the character and condition of these properties, in the plans of the roads for improving and modernizing them, and in their ability to maintain them economically.

In the matter of keeping their physical properties abreast of the demands placed on them, construction and maintenance officers have for many years been struggling with a difficult dilemma. None has realized more keenly than these officers that progress in freight transportation is bound up inextricably



Modern Hump Yards Speed Freight Traffic and Save Car and Locomotive Time—This Is a Night View of the Burlington's New Hump at Lincoln



The Grouting of Soft Track Is Eliminating Slow Orders and Reducing Maintenance Costs

with the condition and character of the fixed properties. Knowing this, they are constantly alert to the need for improving, strengthening and modernizing the various facilities in the interest of greater adequacy, increased efficiency and improved service. Such thinking, however, must of necessity be tempered by the economics involved. How much will the project cost? Is the cost justified by the benefits to be obtained? Finally, is the wherewithal available—the funds, the materials, the man-power?

Then the War

It is the latter consideration—the wherewithal—that has presented the dilemma referred to. For nearly a decade prior to the outbreak of World War II, all efforts to improve the railroad plant were seriously restricted by the scarcity of funds. The need for capital improvements was never greater; the struggle to obtain money for them had scarcely ever been more difficult. Consequently, many projects that were urgently needed—to meet competition, to reduce expenses and promote efficiency, to strengthen the properties and to effect improvements in service—got no further than the planning stage.

Following the outbreak of the war, with the ensuing increase in traffic and revenues, it began to appear that the situation had changed, that the roads would be able to undertake some of the projects that were so long overdue. However, such hopes as were entertained in this respect were badly shaken when it developed that scarcities of materials and labor would make it necessary to limit improvement work to those projects that were essential to the war effort. Although there has been a moderate increase in construction activity during the war years, and although many of the projects carried out will prove beneficial during the post-war period, the accomplishments have fallen far short of the needs.

The present situation is this: For many years the railroads have been unable to improve their properties to the extent necessary in the interest of better service and greater economy. Intensive usage of all fixed facilities during the war accelerated wear and tear so that the back-log of required replacements has grown apace. The certainty of more intensive competition in the post-war period has served to emphasize the need for raising railway operations to new peaks of service and efficiency by revamping and rehabilitating the fixed properties. Plans for many of the necessary projects have already been completed, and others are in the making. Because of progressive improvement in the financial position of the roads during the war years the necessary funds for improvements are more plentiful than for many years. Therefore, the railroads are ready to "shoot the works" when present limitations and restrictions on construction are relaxed or removed.

Near-Miracles Achieved

In spite of the handicaps under which they have conducted their affairs for so many years, railway construction and maintenance officers have accomplished near-miracles in keeping their properties in a condition adequate to the demands made on them. Broadly speaking, their efforts in this direction may be divided into two classifications, as follows: (1) Constant improvement in the methods and techniques employed in repairing and maintaining the properties, and in safe-guarding their integrity, to insure that the maximum value will be obtained for each dollar expended and that the hazard of accidents will be reduced to a minimum; and (2) the making of such additions and betterments to the properties as are necessary in the interest of operating efficiency and better, faster and more reliable service. In both categories of effort, the railroads have been quick to call to their aid the latest developments in methods, materials, design and construction.

Probably the most far-reaching development under the first classification has been the general trend toward the use of power-driven machines in the maintenance and repair of the tracks and structures—in laying rail, in surfacing the track, in handling materials, in right-of-way ditching and grading operations, and in making repairs to bridges and buildings. The importance of this development in reducing costs and improving results—and thereby helping the roads to maintain their properties to the high standard required today with a minimum outlay of funds—cannot be overestimated.

Also of great importance is the progress that has been made in material conservation. The service life of rail, for instance, has been greatly lengthened by the widespread practice of building up battered rail ends by welding and by heat-treating the ends of rails to increase their resistance to batter. Similarly, the service life of timber crossties has been greatly extended by subjecting them to preservative treatment, a practice that is now almost universal in this country. These and many similar expedients have been widely effective in helping the railroads to reduce maintenance costs.

Water—the Great Enemy

Excess water in the roadbed is probably the greatest single enemy of economical track maintenance and no effort has been spared to solve this problem. Developments in this direction have taken the form of extensive sub-surface drainage systems, deeper and more effective surface ditches, the grading and smoothing of the right of way to direct the water away from the track, and, more recently, the injection of grout into the roadbed to displace the troublesome water and to afford a more stable foundation for the track. This latter expedient has proved particularly effective in stabilizing soft track at hundreds of locations throughout the country, thereby making possible the elimination of many slow orders, with their harmful effect on train schedules, and the realizing of substantial savings in the cost of maintaining the track at these locations.

Typical of the expedients taken by the railroads to safeguard the integrity of their properties—and thereby to minimize delays to traffic due to accidents involving trains—are the measures that are employed to prevent defects in rails and to locate incipient defects before they have progressed sufficiently to become dangerous. One of these is the practice, now practically universal, of requiring that new rails be subjected either to the controlled cooling or the Brunorizing process at the rail mill, the purpose being to eliminate shatter cracks which frequently develop into transverse fissures under service conditions. Another is the extensive use of detector cars, by means of which transverse fissures and other internal defects

in rails can be located before any damage has been done. Such cars have literally saved the day during the war years when, with the rail in track receiving an unprecedented battering and with the roads forced to keep old rail in service far beyond its normal service life, the occurrence and growth of transverse fissures have taken place at an accelerated rate.

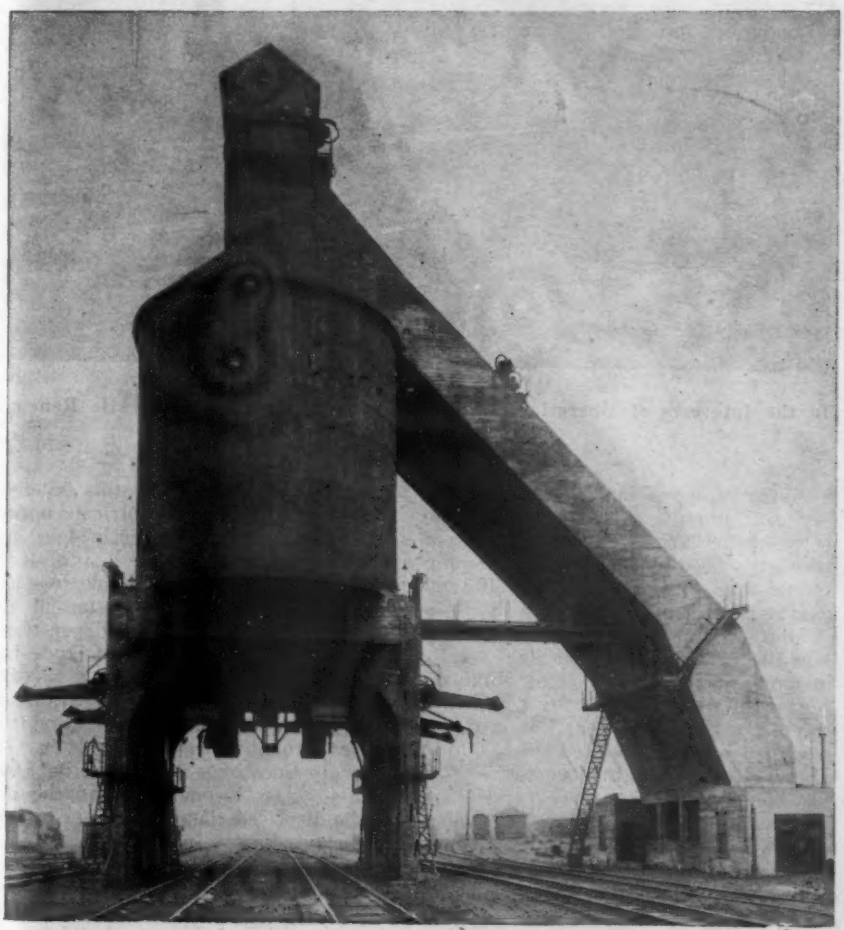
The Improvement Picture

Turning to the second classification of activities—the making of additions and betterments to promote efficiency and economy—the projects comprising this category assume a wide variety of different forms. In one form effort is directed toward the strengthening of tracks and bridges to render them more capable of carrying the heavier tonnages, moving at higher speeds, that are required by present-day conditions. Insofar as the track is concerned this has included heavier rail, more efficient track fastenings, longer crossties and better ballast placed to a greater depth. With respect to bridges it has meant the strengthening or replacement of many structures, inadequacies of which were either preventing the use of heavier motive power or requiring that, if used, speeds be greatly reduced when passing over deficient structures. In all strengthening work, regardless of whether it involves tracks or bridges, not only is operating efficiency promoted but, in addition, further savings are realized because the stronger structures are more easily and economically maintained than their weaker, lighter counterparts.



Mechanization of Track Work Has Been an Important Factor in Helping to Keep Down Maintenance Costs

In another important classification of improvement projects the objective is to achieve a higher degree of operating efficiency or to improve the service rendered to shippers, or both, by modernizing, replacing or enlarging existing facilities that have become obsolete or otherwise unsuitable for one reason of another. Such projects include the modernization of engine terminals, with their facilities for servicing and repairing locomotives; the provision of more efficient locomotive coaling, sanding and watering facilities at intermediate points; the revamping and enlarging of existing classification yards, and the construction of new ones, to promote greater speed and efficiency in handling cars through terminals; the increasing of line capacity by the construction of additional main tracks, longer and more suitably-located passing tracks, and auxiliary freight tracks to facilitate the movement of trains into and out of yards; the reduction of grades on existing lines to permit tonnage ratings and train speeds to be increased; the enlargement or elimination of restrictive tunnels; and the reconstruction or modernization of existing structures of all types to permit them to discharge their particular functions more efficiently and to reduce maintenance costs.



The Handling of Locomotives Through Terminals Is Being Greatly Expedited by Means of Modern Coaling Plants Such As This

Examples Tell the Story

Exactly how do these various types of projects serve to effect their ultimate objectives—better service to patrons and lower operating expenses? This question can be answered best by referring to specific undertakings, describing them briefly, and citing the results obtained.

Consider, for instance, a recent project in which an obsolete coaling wharf of the timber-trestle type at a busy engine terminal was replaced with a modern four-track reinforced-concrete coaling and sanding plant. Constructed at another location in the terminal area to secure maximum efficiency in handling locomotives, the new plant incorporates every modern mechanical aid for facilitating the handling of coal and sand from hopper cars to the overhead storage bins and thence to the tenders and sand domes of locomotives. Because of its greater efficiency as compared with the old timber wharf, this new plant is producing a saving in locomotive time at the terminal equivalent of more than 1,000 locomotive-days per year, with the result that the road involved is able to render substantially more transportation service with the same number of locomotives or, expressed in another way, the equivalent service with fewer locomotives. Also, the increased operating efficiency of the new plant as compared with the old one is such that it has been possible to release the equivalent of 15

men for other work. Augmenting these advantages is the fact that the maintenance cost of the new plant will be 70 per cent less than that of the retired facility.

One of Many

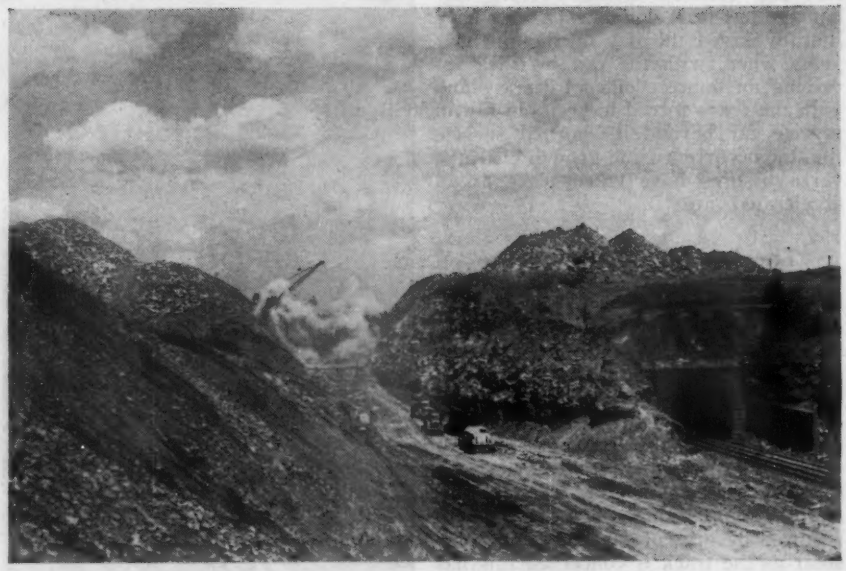
This is only one of many cases in which the modernization of engine terminal facilities has produced substantial advantages in the form of increased efficiency and economy. For instance, at the Shaffers Crossing engine terminal of the Norfolk & Western, at Roanoke, Va.—the most important on this road—the capacity for repairing and servicing locomotives was increased from 80 to 135 or more a day by modernizing the terminal in accordance with a plan that provided for an "assembly belt" layout, that is, one in which locomotives are handled with a maximum of efficiency and without back-tracking, so that they come off the line in complete readiness for the next trip.

Again, at its Armourdale (Kansas City), Kan., terminal, the Chicago, Rock Island & Pacific effected some improvements in the engine-servicing and handling facilities, which, because of the increased efficiency obtained, were estimated in their effect as equivalent to putting 10 additional locomotives in service. These improvements included the construction of new high-speed fuel-oil, water and sanding facilities for oil-burning locomotives, and track changes to reduce the time required in getting locomotives to and from the enginehouse and to eliminate congestion. They have been a major factor in helping the road to handle an increase of 130 per cent in traffic through the terminal with an increase of only 65 per cent in the number of locomotives employed.

What a New Hump Yard Did

Advantages obtainable through the modernization of classification yards are strikingly illustrated by the experience of the Chicago, Burlington & Quincy following the conversion of its flat yard at Lincoln, Neb., into a modern gravity classification yard. Undertaken to preclude congestion and delays to the increased traffic of war-time, the project at Lincoln also included the lengthening of both the eastbound and westbound receiving and departure tracks, the enlargement of a car repair yard, and many other changes and improvements, and was carried out at a total cost of about $1,660,000. In all respects—length and number of tracks, hump layout, car retarders, signals, power-operated switches, communication facilities and floodlights—the new yard will eventually embrace every modern practice and device.

The results have fully justified the effort and expense. One advantage is that the new hump permits 57 classifications to be made, as compared with 30 before. Because of the increased speed and efficiency with which cars can be moved through the yard there has been a saving of approximately 280 car-days per day, and the average elapsed time between the arrival and departure of trains has been reduced by 1 hr. 45 min. On this basis, it is estimated that 102,200 car-days are being saved annually.



Elimination of Restrictive Tunnels Is Doing Much to Promote Efficiency in the Handling of Freight Traffic



In the Interests of Operating Efficiency Inadequate Bridges Must Be Renewed or Strengthened

Many examples are available showing how the strengthening of bridges results in more efficient operation by eliminating speed restrictions or by permitting the use of heavier power. For instance, one road recently acquired six 5,400-hp. Diesel-electric freight locomotives for use on its main line, thereby releasing for use elsewhere a considerable number of steam locomotives weighing 423 tons each. However, in one territory where it was desired to use these displaced locomotives there were three bridges which were inadequate to carry them, including a 70-year old steel and wrought-iron viaduct more than 800 ft. long. By strengthening this viaduct, which proved to be an intricate undertaking, and the two lesser bridges, the road was able to place the 423-ton locomotives in service on the line in question, with a resulting substantial increase in the tonnage hauled per train.

Another road—the Rock Island—has carried out in recent years a system-wide bridge-strengthening program for the purpose of reducing operating expenses through the more extended use on its main lines of a number of its 5,000 (4-8-4) class locomotives and the use of the displaced classes of power on less important lines. Involving a total of more than 600 bridges and 3,400 miles of line, this program has not only reduced operating expenses by permitting the use of heavier power, but has also permitted the scrapping of the older and less efficient locomotives, resulting in

considerable simplification of the various classes of engines maintained on the system.

Frequently, instead of strengthening inadequate bridges, they are reconstructed or replaced in their entirety. Recent examples are the replacement by the Atchison, Topeka & Santa Fe of its old bridge across the Colorado river at Topock, Ariz., and the construction by the Southern Pacific of a new bridge across the Pecos river in Texas. In each of these instances a situation was relieved in which highly restrictive slow orders over the old structure were interfering with efficient train operation on an important transcontinental line.

Restrictive Tunnels Must Go

The elimination or enlargement of tunnels with restrictive clearances, thereby permitting efficiency to be increased by the operation of larger locomotives, cars and loads, is a type of work that has been receiving increasing attention in recent years. Typical of projects of this type is the program of tunnel enlargement and elimination that was recently completed by the Southern Pacific on its San Joaquin Valley line between San Francisco, Cal., and Los Angeles. Constructed in 1876, this line originally included 26 tunnels which, because of the increasing dimensions of loads carried, eventually became restrictive, thereby imposing limitations on the character of service that the road was able to render over this line.

Some years ago the company undertook a program to remove these restrictions by enlarging the tunnels or by eliminating them altogether by "daylighting" or by means of line changes. In the final phase of this program, completed recently, the last six restrictive tunnels were eliminated, using for this purpose a company-owned grading organization comprising a complete and well-balanced complement of the most modern off-track grading equipment obtainable. This grading organization, it may be noted, was acquired with the thought in mind that, following completion of the tunnel work, there would be sufficient grading of other types, in line changes, in the construction of additional tracks and in miscellaneous work, to keep it busy indefinitely.

During the war years many roads have found it necessary to undertake extensive improvement work for the purpose of enlarging the capacity of their lines sufficiently to enable them to move the record volume of business that developed. Among these was the Santa Fe, on whose Coast Lines the amount of work done was particularly extensive. This work, which was carried out to permit the movement of a volume of business more than 2½ times that carried in the immediate pre-war years, involved the general lengthening of passing tracks on all the main lines of the grand division; the enlarging and lengthening of all the important yards, including the construction of long auxiliary freight tracks at most of them; the construction of additional trackage at a number of locations; and the installation of centralized traffic control on 117 miles of line. This project entailed the construction of approximately 80 miles of passing tracks, 98.5 miles of yard tracks, 30.5 miles of second tracks, and 23.5 miles of auxiliary tracks, a total of nearly 233 miles of trackage.

The savings and other advantages that are being realized through the grouting of soft track are little short of phenomenal. During the last four years, for instance, the New York Central has treated 197 "soft spots" having a total length of 36,379 ft., on its lines West of Buffalo. Of this trackage, a total of 11,882 ft. was grouted during 1943 at a total cost of $16,898. As a result of this work the monthly cost of maintaining the trackage involved was reduced from $2,308 to $151, a drop of $2,157. This saving amounts to a return of more than 150 per cent annually on the investment. In 1944 a total of 17,943 track feet was grouted at a total cost of $32,482, resulting in the monthly cost of maintenance being reduced from $4,014 to $323, or $3,691, a return of approximately 135 per cent annually on the investment.

These are remarkable figures. The fact that they are averages covering many locations, and not outstanding individual examples chosen especially for purposes of dramatization, adds greatly to their significance. But the monetary savings are not the only benefits obtained through roadbed grouting—or roadbed stabilization in any of its different forms. Perhaps of even greater significance to the shipper is the fact that the many speed restrictions that the roads are forced to keep in effect because of soft track can be and are being eliminated by effective roadbed stabilization methods, thereby speeding train movements.

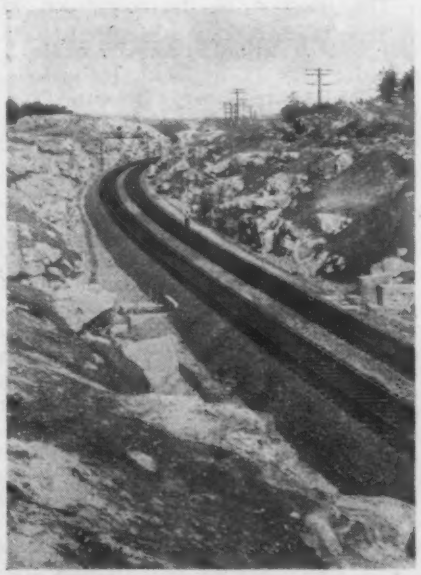
Still another activity of railway engineering departments that is productive of large savings and other far-reaching advantages is the provision of facilities for treating locomotive boiler water to remove hardness and thereby prevent the formation of scale in, and the pitting of, locomotive tubes and boilers. An outstanding example of the benefits obtained by adequate water treatment are provided by the experiences of the New York Central, which were described recently in a paper by T. W. Hislop, water service engineer, New York Central System, published in the *Railway Age* of February 3, 1945.

"At the present time," said Mr. Hislop, "a total of 253 water supplies are treated, employing 34 lime-soda softeners, 78 liquid proportioners, and 141 by-pass feeders using compressed chemical compounds. The present estimate indicates that a net saving of more than $2,500,000 a year is being realized from water treatment on the New York Central System. If consideration is given to the intangible benefits derived from the extended time between boiler washouts, less boiler maintenance and the greater mileage realized between shoppings, which result in greater availability of power, the saving would far exceed the above mentioned figure. The time between washouts has been extended in most cases from 6 days to 30 days and mileages between shoppings have increased more than 100 per cent."

Reducing Pumping Costs

The pumping of boiler feed water for locomotives is another operation that affords opportunities for large savings through modernization. Formerly, most pumping plants embodied steam or engine-driven pumps that required constant manual attendance, but in recent years many roads have been replacing such installations with automatically-controlled, electrically-driven units to reduce pumping costs. Illustrative of this practice and the results obtained is the experience of the Southern, which in 1934 began modernizing its water-pumping stations in the manner described. The first 51 automatic pumping stations that this company installed entailed an investment of $91,933, but the savings are netting the road an aggregate annual return of $66,489, or 72 per cent on the amount invested, with the savings at some locations running well over 100 per cent.

Except for limitations of space this recitation could be extended indefinitely, both as to the number and the types of projects and developments through which the railroads are reducing costs and improving their service. Notwithstanding the progress made to date, it is no exaggeration to say that the surface of the potentialities has barely been scratched. The railroads have the "know how" and, given the necessary funds, man-power and materials, they can produce a plant which will be equal in every respect to the demands that will be made upon it in the highly-competitive period certain to follow the end of the war.



Modern Heavy-Duty Track Is More Easily and Economically Maintained Than Lighter Construction

Railroads-in-War News

Joint Board to Help European Railroads

Group will coordinate traffic and allocate equipment; Gen. Young a member

The State Department has announced that an agreement was signed in London on May 8, V-E Day, establishing a provisional organization for "advising and guiding" the authorities concerned with coordinating the movement of traffic of international character and rehabilitating the railroad and waterway transportation system of central Europe. A more permanent organization for the same purpose is in view, but the provisional organization was put into effect upon cessation of hostilities in Europe.

Russia Not in on It—The countries that signed the agreement on May 8 were Belgium, France, Luxemburg, the Netherlands, Norway, Great Britain, and the United States. Russia and other European countries have the provisions of the agreement under consideration, according to the State Department, but it would not apply in any event to Russian territory or to Great Britain. Countries participating in the provisional arrangement may withdraw on three months' notice, but the permanent plan is designed to be effective for two years, after which any country could withdraw at will.

The plan provides for a council, with legal and financial powers, and an executive board to perform the executive functions of the organization. The economic counselor to the United States embassy in London, Harry Hawkins, has been named this country's representative on the provisional council, and Brigadier General Charles D. Young, deputy director of the Office of Defense Transportation, has been designated to represent this country on the provisional executive board. During General Young's absence on this assignment, Homer C. King, executive assistant to the director of the O.D.T., has been appointed acting deputy director.

Will Allocate Equipment—According to the agreement, the European Central Inland Transport Organization will work with and assist the military authorities in occupied territory. It will allocate for use the available transportation equipment, arrange for the orderly restoration of displaced equipment, coordinate the movement of traffic of common concern, make recommendations as to transportation charges, make recommendations for, and provide technical assistance in, the rehabilitation of surface transportation, and implement international coordination between railways within the field of its authority.

The purpose of the organization is set forth in the preamble of the formal agreement as follows:

"Whereas, upon the liberation of any territories of the United Nations in Europe, and upon the occupation of any enemy territories in Europe, it is expedient for the fulfillment of the common military needs of the United Nations and in the interests of the social and economic progress of Europe, to provide for coordination both in the movement of traffic and in the allocation of transport equipment and material with a view to insuring the best possible movement of supplies both for military forces and the civil population and the speedy repatriation of displaced persons, and also with a view to creating conditions in which the normal movement of traffic can be more rapidly resumed."

I. C. C. Service Orders

By Amendment No. 2 to Service Order 99, effective May 12, the Interstate Commerce Commission has broadened the authority of W. F. Kirk, its agent at Chicago, so that he may divert and reroute all carload freight traffic and empty cars in territory west of Lake Michigan, the Illinois-Indiana state line and the Ohio and Mississippi rivers.

War Department freight moving under symbols MTX, MI or GS is not subject to his orders, however. Under the language of the order, such diversion or rerouting may be directed by Mr. Kirk when, "in his opinion," any railroad cannot accept and move such traffic and any other railroad is less congested or is more able to handle it.

The intention of the commission in issuing Amendment No. 1 to Service Order 304 has been clarified by Amendment No. 2, effective May 11, by which Indianapolis, Ind., and Lawrenceburg, Cincinnati, Ohio, and Louisville, Ky., are added to the origin territory for which permits issued by the commission's agent for the Central Permit Area are required for the carload shipment of grain to the general territory east of Lake Michigan and the Mississippi river.

The provisions of Service Order No. 80 have been modified by Amendment No. 30 thereto, effective May 21, by which the commission's permit agents are authorized to waive permit requirements as to grain for one or more cities within the market area over which their authority extends, or as to rice for one or more industries.

Amendment No. 1 to 6th Revised Service Order No. 259 has been set aside by Amendment No. 2, effective May 15, by which the expiration date of the order is fixed as June 1 and the requirement of War Food Administration permits for the shipment of potatoes is lifted as to all territories except Aroostook county, Maine, and Kern county, California.

Wants W.P.B. Freight Car Order Rescinded

Industry advisory committee calls for immediate revocation of L-97a

Immediate revocation of General Limitation Order L-97a, which controls production and delivery of new freight cars, was recommended to the War Production Board last week by members of its Railroad Car Builders Industry Advisory Committee. This was revealed in a W. P. B. announcement of May 15, which said that the call for revocation came by a six-to-five vote.

For this year's third quarter, the W. P. B. has allocated to the Office of Defense Transportation 220,000 tons of carbon steel for freight cars, according to the report made to the committee by its government presiding officer—D. W. Odiorne, chief of the Transportation Equipment Division's Motive Power and Rolling Stock Section. Mr. Odiorne also informed the committee that O. D. T. has recently requested W. P. B. to allocate materials immediately for the construction of passenger cars at the rate of 250 a quarter.

Passenger Car Prospects—Mr. Odiorne's comment on the latter, as reported in the W. P. B. release, was that "materials prospects for limited passenger car building in the third quarter of 1945 were good with the possible exception of stainless steel. However, there may be some difficulty in obtaining components immediately but these should be forthcoming in time to permit delivery of cars to start late in 1945."

Meanwhile, Mr. Odiorne estimated that freight car production in this year's fourth quarter will be 11,000 cars on the basis of the steel allocated for the third quarter, as noted above. He told the committee that production during the last several months "has been very disappointing," listing deliveries as follows: January, 4,353 cars; February, 4,024; March, 4,842; and April, 3,495. The carry-over as of May 1 was put at 4,823 cars.

Members of the committee, according to W. P. B., attributed the lag in production to "manpower difficulties, primarily absenteeism and work stoppages." As a result of the lag, the committee was told that W. P. B. Chairman J. A. Krug has appointed a task committee to see what can be done to overcome the difficulties.

Export Requirements—Army representatives at the committee meeting were reported to have said that the Army program for freight cars in 1946 would be "very modest." Representatives of the

(*Continued on page 909*)

More Troop Travel Foreseen by Kendall

Will call for "substantial increase" in cars assigned to that service

Anticipating that the victory in Europe "will quickly result in a very substantial increase in the number of cars required to handle our returning troops," Chairman Warren C. Kendall of the Car Service Division has given the military transportation situation first place in his May report on the "National Transportation Situation." The report, dated May 10, is the latest of the monthly reviews which Mr. Kendall has been sending to general chairmen and National Association officers of the Shippers' Advisory Boards.

Troop Travel to Rise—"Victory day in Europe," it says, "means the start of a new phase in the handling of troop movements by rail in this country. During recent months, because most of our organized units had been moved overseas, the demands for rail transportation of troops have been somewhat under the previous peaks. Now the Army is immediately starting on their redeployment program under which about three million of our men who are now in Europe will be brought back to this country, given furloughs, and either released or retrained for service in the Pacific. Concurrently the homeward movement of wounded soldiers will be accelerated."

Meanwhile other railroad passenger travel "continues heavy." The recent decreases in troop movements have been offset to a large extent by the increasing movements of imported foreign laborers and prisoners of war who are handled in special train movements.

Sees No Freight Let-up—Neither does Mr. Kendall think that V-E Day will result in a lighter freight load. In that connection he does not anticipate "any considerable relief with respect to the loading of munitions and other supplies to our armed forces since undoubtedly the tempo of military operations will continue heavy in executing the war with Japan." At the same time, "it will be necessary to continue, probably for some time, the movement of food and other necessities for civilian use in European countries."

Mr. Kendall is confident, however, that the transportation requirements of the heavy program ahead will "by and large" be satisfactorily met "with the continued close cooperation of all concerned." In other words, his confidence is predicated on the assumption that there will be "close observance of the necessity for prompt handling of box cars by both industries and carriers."

Elevators Blocked—Commenting specifically on current box-car supply conditions, Mr. Kendall noted that, while there was some improvement in the month since his previous report, "the situation continues tight and particularly on principal grain loading roads in western territory." Thus 643 country elevators were blocked as of May 7, the largest number on record for that period of the year—a substantial reduction, however, from the 1945 peak of 2,297 elevators closed as of February 28.

With estimates of bumper crops of winter wheat coming from the Department of Agriculture, the C. S. D. chairman notes that provision for the grain movement will remain the "greatest single box car problem." In this connection, the quota system set up by C. S. D. for delivery of empty box cars to western roads "continues to make satisfactory progress." But the situation still requires that "utmost efficiency be practiced in the handling of every available unit of box car equipment."

Melons and Livestock—In preparation for handling the watermelon crop of the southeastern states, C. S. D. has reissued its special car order No. 37, which requires roads north of the Ohio and Potomac and west of the Mississippi rivers to return ventilated box cars of southern ownership to the owning roads empty, by the most expeditious route. With the continued heavy loading of livestock, particularly in southwest territory, C. S. D. has found it necessary to provide assistance to the livestock loading lines through delivery of surplus stock cars from eastern and southeastern areas as well as withdrawing this type of equipment from other loading where it was being substituted for box cars.

Present demands for refrigerator cars "are being met satisfactorily, although the margin between the supply and demand is close in Texas, Louisiana, Mississippi, and Alabama, with slight deficiencies reported last week in Texas and in the potato loading area of Alabama. The general situation is being constantly watched and empty refrigerator cars ordered to the various loading areas on the basis of distributing the available supply equitably and taking care of the requirements for perishable traffic."

Open-top Situation—With respect to open-top cars, Mr. Kendall reports "little change in the demands and supply" since last month. With the exception of the last week in April, "during which there was a small deficiency with a slight loss of coal production," all requirements for coal cars have been met. But "every effort should be continued to give coal cars the most expeditious handling"; for "all available hoppers will be required to meet the demands of coal, coke, ore, stone, and other commodities using this type of equipment."

Requirements for gondolas "continue heavy," but "all obligations as a total have been reasonably well met; however, the supply is uncomfortably thin on several roads with some spotty deficiencies in the Eastern-Allegheny and Southern districts." Gondolas are being substituted for box cars "to the fullest practicable extent." With demands continuing on a high level and the supply tight in certain originating districts, every plain flat car "will be required to continue to meet the obligations for this type of equipment."

All requirements for heavy-capacity flats have been met "with the exception of one or two special types for which there have been short periods of waiting." Mr. Kendall again calls attention to the "commend-

(*Continued on page 909*)

"Redeployment" Adds to Railroads' Task

Reconversion offers some help in men and material for Army's big program

The details of the Army's plans for "redeployment" of its forces and the War Production Board's plans—integrated with those of other government agencies—for the limited reconversion of American industry to the production of civilian goods, so far as they have been disclosed in the first few days after the official announcement of the end of the war in Europe, add up to the prospect that the load on the railroads will be, not lighter, but bigger than ever.

More Traffic Than Ever—In the words of Colonel J. Monroe Johnson, director of the Office of Defense Transportation, "the demands upon transportation will certainly, for some considerable time, continue to be as heavy or heavier than they have been. There must not be the slightest relaxation in effort or cooperation on the part of transportation workers, shippers or the traveling public." The "phase two" program means, in effect, as he sums up the situation, that "the strain on our railroads, our truck and bus lines, our waterways and on all other transport, will be increased in the next few months. The transportation job ahead in defeating Japan will be a back-breaking—and brain-taxing—one."

More Material Available—The opening moves in reconversion policies and procedures adopted by the W. P. B. were announced last week. Among the specific actions already taken are these:

1. Revocation of a large number of limitation, conservation and other restrictive orders of the L, M, P, E and U classifications. On April 1 there were 420 such orders in effect. A substantial number have been revoked already, and W. P. B. Director Krug has predicted that about one-half of them will have been revoked "within the next few months." Among others, those revoked already include certain schedules under L-211, covering steel wheels and tires, structural steel shapes, steel axles and forgings, rails and track accessories, and carbon steel plates.

2. "Open-ending" the Controlled Materials Plan, effective July 1, in order to permit the delivery after that date, without allotments under the plan, of steel, copper, and aluminum, provided such delivery can be made without interference with authorized C. M. P. orders. Orders may be placed immediately for delivery after July 1.

3. Removal, in most instances, of so-called rating floors, making it possible to place unrated orders where production and delivery thereof will not interfere with rated orders.

Big Share Will Go to Allies—"Many types of munitions items and military supplies are being cut back following the defeat of Germany," Mr. Krug remarked, "since it is now possible for the armed forces to readjust their procurement to a one-front war basis. . . . Downward re-

visions of war production schedules cannot all be made instantly. Contract cutbacks, and the resulting release of productive resources, will be spread over a period of months. In the first three or four months a substantial share of the freed materials must be channeled into the production of highly essential items for ourselves and our Allies. The pent-up demands for such important programs as farm machinery, oil country goods, transportation, and utilities will consume a great deal of the material freed by cutbacks."

Mr. Krug emphasized that revocation of particular restrictive orders will not necessarily mean immediate resumption of civilian production of affected items, but that it does "clear the way" for such activity as facilities, materials, and manpower become available. Strict inventory controls will be maintained until materials are sufficiently free to eliminate serious danger of hoarding or preemption of supplies, and W. P. B. will retain its machinery to enforce compliance.

Items Still Short—Further relaxations in W. P. B. controls will be announced shortly, Mr. Krug added. These will include a simplified priorities system and an "orderly elimination" of the Controlled Materials Plan. It is expected, however, that existing priorities will remain in effect for the balance of the year. He went on to explain that the heavy demands of the war in the Pacific will result in continued shortages of many materials, including textiles, leather, lumber and other forest products, all types of containers, tires and rubber products, certain chemicals, tin, lead, cadmium, and some other metals, so that many of the controls relating to these items must be retained. In addition, fine copper wire and sheet steel are expected to be in short supply for some time.

The W. P. B. policy contemplates that through the third quarter of this year, and in some cases longer, existing civilian programs already authorized will continue to receive "affirmative priorities assistance," including C. M. P. allotments for production materials. The production of additional civilian products will receive such assistance on a program basis only if the Requirements Committee determines that such assistance is needed to meet war-supporting or critical civilian or export requirements.

Labor Supply—The War Manpower Commission has announced its intention of changing its system of area classifications for manpower control purposes, effective July 1. General relaxations of manpower controls are not in prospect until Japan is defeated, according to W. M. C. Chairman McNutt, but progressive relief is expected. At the end of a year from V-E Day, unemployment caused by production cut-backs and the return of veterans is likely to be around 2,500,000, as compared with 1,000,000 now, he said, as reconversion, industrial expansion and hiring by many industries will provide jobs for most workers who lose their war jobs through cut-backs. The home front will face manpower problems within the next three months, however, he added; that is, after the demand slackens in some areas and before reconversion gets under way.

After July 1, W. M. C. territorial groupings will be as follows: Group I, areas where labor stringency exists for meeting war production requirements—all manpower controls will be continued; Group II, areas in which there is an over-all balance of labor supply and demand—manpower controls will be optional; Group III and IV, areas where civilian production should be encouraged and new contracts placed—manpower controls will be completely eliminated. A sharp drop in the number of Group I areas is expected within three months. The existing list of essential activities will be continued, but it will be modified until it includes only direct war and war-supporting production, according to Mr. McNutt. Applicants for jobs will still require certificates of availability in Group I areas, after July 1, and this requirement will be optional with local authorities in Group II areas.

Tough Transport Job—The War Department's present plans for redeployment, shifting the strength of the Army from Europe to the Pacific, were disclosed last week by General Somervell, commanding the Army Service Forces, Major General Charles P. Gross, chief of the Transportation Corps, and other officers. The problems of logistics and supply resulting from stepping up the pace of the war with Japan, while the return of men and materials from the European theater is under way have led General Gross to the conclusion that, "from a supply and transportation standpoint, the hardest part of the struggle still looms ahead."

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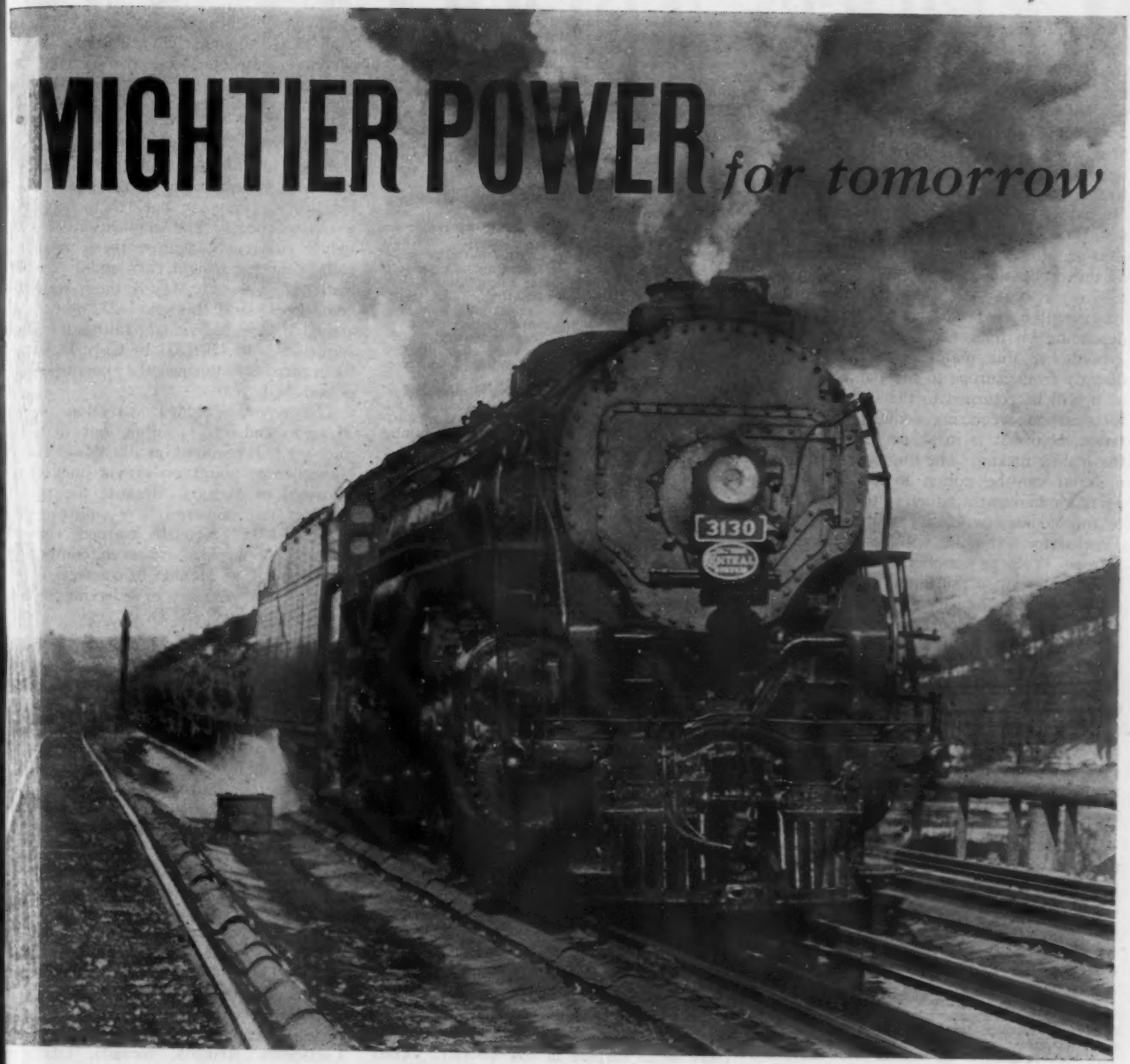
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visions of war production schedules cannot all be made instantly. Contract cutbacks, and the resulting release of productive resources, will be spread over a period of months. In the first three or four months a substantial share of the freed materials must be channeled into the production of highly essential items for ourselves and our Allies. The pent-up demands for such important programs as farm machinery, oil country goods, transportation, and utilities will consume a great deal of the material freed by cutbacks."

Mr. Krug emphasized that revocation of particular restrictive orders will not necessarily mean immediate resumption of civilian production of affected items, but that it does "clear the way" for such activity as facilities, materials, and manpower become available. Strict inventory controls will be maintained until materials are sufficiently free to eliminate serious danger of hoarding or preemption of supplies, and W. P. B. will retain its machinery to enforce compliance.

Items Still Short—Further relaxations in W. P. B. controls will be announced shortly, Mr. Krug added. These will include a simplified priorities system and an "orderly elimination" of the Controlled Materials Plan. It is expected, however, that existing priorities will remain in effect for the balance of the year. He went on to explain that the heavy demands of the war in the Pacific will result in continued shortages of many materials, including textiles, leather, lumber and other forest products, all types of containers, tires and rubber products, certain chemicals, tin, lead, cadmium, and some other metals, so that many of the controls relating to these items must be retained. In addition, fine copper wire and sheet steel are expected to be in short supply for some time.

The W. P. B. policy contemplates that through the third quarter of this year, and in some cases longer, existing civilian programs already authorized will continue to receive "affirmative priorities assistance," including C. M. P. allotments for production materials. The production of additional civilian products will receive such assistance on a program basis only if the Requirements Committee determines that such assistance is needed to meet war-supporting or critical civilian or export requirements.

Labor Supply—The War Manpower Commission has announced its intention of changing its system of area classifications for manpower control purposes, effective July 1. General relaxations of manpower controls are not in prospect until Japan is defeated, according to W. M. C. Chairman McNutt, but progressive relief is expected. At the end of a year from V-E Day, unemployment caused by production cut-backs and the return of veterans is likely to be around 2,500,000, as compared with 1,000,000 now, he said, as reconversion, industrial expansion and hiring by many industries will provide jobs for most workers who lose their war jobs through cut-backs. The home front will face manpower problems within the next three months, however, he added; that is, after the demand slackens in some areas and before reconversion gets under way.

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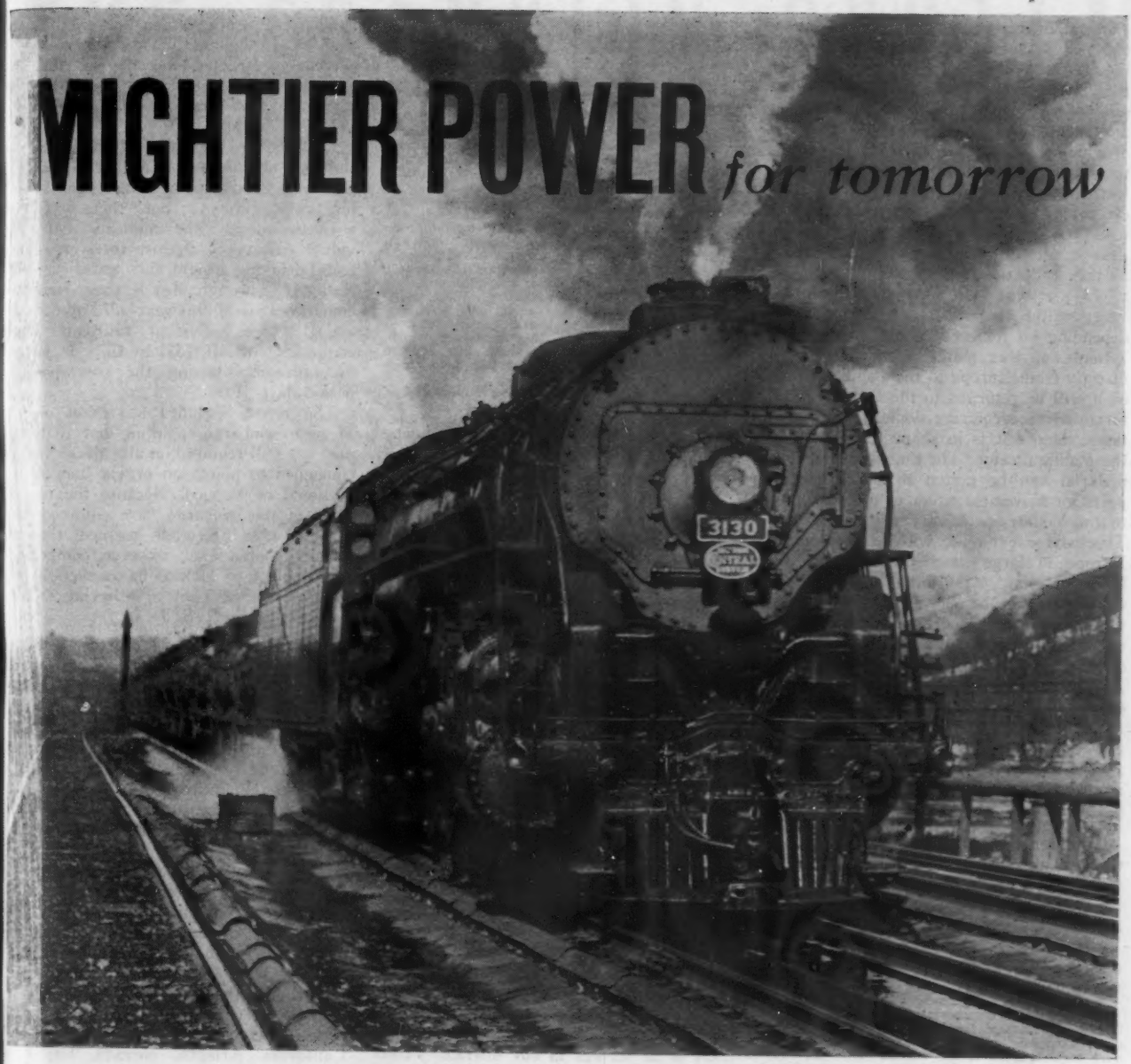
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material, of this Pacific war, and thus making possible some cut-backs in the Army's requirements and some reconversion of industry to civilian production, is the stockpile of war material which has been accumulated in Europe, substantial portions of which it is proposed to recover for further use. Elaborate programs have been worked out to utilize this material. It is estimated that recoverable quantities, in terms of percentage of the total now in Europe, after allowing for the requirements of the occupation forces, will be from 60 to 75 per cent. On individual items the range will be from 10 up to 90 per cent, depending on their character.

Some of this material can be moved directly from Europe to the Pacific. Much of it will be returned to the United States for overhaul, requiring domestic transportation, before it is in shape for service in the Pacific theater. The time in which such material can be gotten to the European ports for movement either to the Pacific or to this country will vary with its nature. Trucks, for example, will be required in Europe in large numbers to handle the other material, so the initial rate of return of trucks will be slow, and it will not develop to large proportions for six months or so. At the same time, there will be an accelerated demand for trucks in the Pacific, as more materials are received there. The result, according to the Army's spokesmen, is a continued current need for new trucks for the Army, with the prospect of a very substantial reduction in such requirements in the later stages of redeployment.

Johnson's Prognosis—What all of these plans and complications add up to in terms of demands on the American railroads has been stated by Colonel Johnson as follows:

"The next 12 to 15 months will be the most critical in the history of American transportation. . . .

"All forms of transportation have for the past three years carried the heaviest freight and passenger burdens in the country's history. They have been strained to the utmost. Now seriously short of materials and equipment and skilled manpower, these facilities must continue to carry a load which shows no prospect of diminishing. On the contrary, transport demands will be heavier in the difficult days ahead. It will be many months before our coastal shipping again takes its share of the country's freight traffic; before the tankers carry the greater part of our oil products to the East coast; before inter-city automobile passenger traffic regains its pre-war volume. In the meantime, rail, highway, and inland waterway transport must continue to bear these extra burdens in addition to carrying military material and personnel.

"And the war job in the narrow sense is made no easier by the defeat of the European enemy. Far from it. Increased shipments of guns, tanks, ammunition and other military supplies must be moved to the West coast. This means longer hauls and greater turnaround time as traffic goes west toward Japan. There will be difficult problems in shifting over the bulk of traffic to the western lines. Grades and curves on these rail lines to the Pacific ports were designed to haul heavy traffic in the opposite direction. The West has no network of multiple track lines such as exists in the East. Thousands of miles of western lines are single track.

"New troop contingents must be transported to the West coast. Casualties from the European theatre still must be moved to our hospitals. On top of all, there will be an unending stream of troop trains bearing contingents home from the European area moving across the continent. With stops for furloughs, those troops and all their fighting gear will be added to the nation's transcontinental transportation load.

"Military personnel transportation requirements for the next twelve months will be far greater than for any similar period since Pearl Harbor. In addition, transportation, both official and furlough, must be provided for the great number of members of the armed forces who will continue to be stationed in this country. . . .

"We can depend on the transportation agencies handling traffic in such a manner as to accomplish this difficult task, and the necessary wartime controls of the O. D. T. will be continued to support their efforts in accomplishing that purpose. Likewise, the continued cooperation of the public in travel conservation will be increasingly necessary in the coming months. It is now more essential than ever that every item of transportation equipment be conserved and be fully utilized in support of the war effort.

"We ask that the public forego all unnecessary travel this spring, next summer, next fall and next winter, unless the Japs decide by that time that they have taken all the beating they can stand. The trains and buses still have no space for unessential travel. Resort trains, buses for vacation trips, still are out of the question.

"It continues to be essential that skilled transportation workers stay on their jobs and continue their long working hours. Every form of transportation is feeling the manpower pinch. The railroads, which already have lost 300,000 men to the armed forces, could bog down from lack of manpower. . . .

"No plans should be made for group meetings, conventions and trade shows which come within the scope of the convention ban. The War Committee on Conventions will continue to scrutinize border-line cases.

"Passenger train schedules which have been cancelled cannot yet be restored. Additional schedules may be cancelled, if such action is found necessary to meet military and essential civilian requirements. One large railroad system is already screening passenger travel reservations and others may have to take similar steps. Civilian travel in the Pacific coast area will become well-nigh impossible at times during the coming months.

"If necessary materials, equipment and manpower are not provided, serious transportation congestion and delays will occur and even the military effort will be impeded. It may even become necessary to establish a system of priorities to cover the movement of civilian commodities. There will be a double traffic peak next fall when the volume of westbound war traffic will be attaining its maximum at the time when the grain crops of the West must be hauled to market. This presented a serious crisis last year in which disaster was barely averted, and the situation may well be worse this year."

More Troop Travel Foreseen by Kendall

(*Continued from page 907*)

able job" performed with these heavy flats "of which the entire ownership is limited to approximately 500 units." With respect to covered hoppers, the season is now at hand when they are in greatest demand; and the supply "has been stretched to meet increasing requirements until at present there is no surplus in any district." Thus Mr. Kendall's appeal for prompt release of such equipment by contractors and other consignees receiving inbound loads of cement, sand, lime, soda ash, etc.

Tanks as Busy as Ever—All available tank cars are in active service, "and it is not contemplated that there will be any easement in the demand for this class of equipment during coming months." The oil movement to the Atlantic seaboard is being maintained at approximately 540,000 barrels per day; and "with the elimination of the flood difficulties in the Southwest and generally improved operating conditions in other sections of the country, it is expected that this volume may be increased." The Pacific Coast movement now amounts to 160,000 barrels, or 800 cars, per day. Meanwhile, "there has been no change in requirements for tank cars for commodities other than petroleum . . . and these movements continue to receive close attention."

Too Much Car-Holding — Weekly freight car detention reports showed that when checks were made during April, 55,786 cars or 15.42 per cent of the total on hand were being detained over the free time of 48 hours. This was the lowest percentage reported since the car efficiency program was started in March, 1942; it compares with March's 16.13 and April, 1944's 17.7.

Earlier, Mr. Kendall had discussed the embargo situation, noting that no embargoes of a general nature were placed since his previous report; but "there has been a continuance of the application of individual embargoes against receivers found to be delaying freight cars unduly for unloading." Through May 8, there were 430 embargoes placed this year—272 by C. S. D. and 158 by individual railroads. This compares with 418 (331 by C. S. D. and 87 by railroads) during the corresponding period last year.

The report included a section on the Mexican embargo, pointing out that permits are still required on all carload freight consigned to points on or via lines of the National of Mexico. Because the restrictions of this embargo "are enforced very rigidly," Mr. Kendall warned that no shipper should load, or even contemplate a movement to Mexico in connection with the National without first having secured a permit from C. S. D.

Westward Refrs. Helpful—With respect to the l.c.l. situation, Mr. Kendall mentioned the recent Office of Defense Transportation permit which relaxed maximum loading restrictions on l.c.l. cars destined to the grain-loading area. "This permit," he said, "serves the dual purpose of enabling the railroads to by-pass some of the eastern transfers, thus relieving the situation there and at the same time aids in moving box cars into grain-loading areas." In his subsequent discussion of the refrigerator car situation, the C. S. D. chairman urged shippers to consider the possibilities of taking greater advantage of the Interstate Commerce Commission's Service Order 104 which permits the loading of up to three refrigerator cars (which would otherwise return empty) to handle one box car load of freight destined to California, Arizona, Nevada, Utah, and Southern Idaho.

Wants W. P. B. Freight Car Order Rescinded

(*Continued from page 906*)

Foreign Economic Administration are understood to have estimated that agency's 1946 requirements at about 98,000 cars including 38,250 now being procured for France. Other requirements included in the F. E. A. estimates were: Netherlands 25,000 cars; Yugoslavia, 11,140; Belgium 6,000; India, 6,000; Italy, 4,250; Brazil 2,000; Chile, 1,250; Argentina, 1,000; Mexico, 700; and possibly another 19,400 for France.

New N. M. B. Mediator

James E. Newlin of Pittsburg, Kan., has been appointed to the National Mediation Board's staff of mediators. The announcement stated that Mr. Newlin has had 19 years of railroad experience with the Kansas City Southern, having served for the past three years as chief clerk to the superintendent of that road.

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GENERAL NEWS

Forwarder-Truck Rate Bill Passed by Senate

Congressional action on extension completed as May 16 deadline approached

The Senate on May 15 passed the House-approved bill to extend for another nine months the period within which forwarders must change over from joint-rate arrangements with truckers to the use of assembling and distribution rates published by the carriers. Congressional action on the measure, H. R. 3038, was thus completed in time to give President Truman one day to act on it before the May 16 deadline had passed.

The bill made rapid progress through Congress after it was introduced on April 25 by Chairman Lea of the House committee on interstate and foreign commerce following receipt by the Senate committee on interstate commerce of an adverse Interstate Commerce Commission report on another bill which would have met the deadline by permitting the joint-rate arrangements to continue in effect until the I. C. C. determined upon a permanent policy with respect to the matter (see *Railway Age* of April 21, page 718). On April 27, two days after its introduction, H. R. 3038 was reported favorably to the House by the interstate commerce committee; and it was passed by the House without debate on May 7. The Senate committee on interstate commerce reported it favorably to the Senate on May 10.

Senate Committee Report—That committee's majority report (there was a sharp dissent from Senator Reed, Republican of Kansas) noted that little progress had been made on changing over from the joint rates to the assembling and distribution rates; discussed the problem generally; and reproduced letters favoring the extension which the committee had received from Director J. Monroe Johnson of the Office of Defense Transportation, Secretary of War Henry L. Stimson, and Administrator E. S. Land of the War Shipping Administration. Also, it was noted that favorable action on the bill had been urged in "thousands of letters and telegrams" received by the committee "from large and small shippers throughout the country."

Dissenter Reed assailed the forwarders for their failure to turn to the assembling and distribution rates, and he also charged the I. C. C. with "incompetency and muddled thinking" for the way its members split on the aforementioned report in which the commission majority condemned proposed legislation to continue the joint rates until a permanent policy is worked out. At the same time Mr. Reed did not go along with statements to the effect that the commission could have done something about the present situation. By the "extraordinary procedure" of extending the transition period, he said, Congress has deprived the commission of power to deal with the situation. If this had not been done, the Kansan thinks "these unlawful joint-rate tariffs would have been stricken from the commission files and the unlawful practices stopped."

Previously Senator Reed had asserted that, before they were regulated, the forwarders "followed their own sweet will when it came to discriminating between shippers"; and he added that neither prior nor subsequent to regulation have they displayed "any noticeable sense of responsibility to the public." He went on to charge that their reluctance to use the assembling and distribution rates is due to the fact that they are not made a "special class," since section 408, which provides for such rates, fails to confine them to forwarders but makes them available also to others who are in a position to use the facilities of the carriers "under like conditions."

Predicts Further Extensions—Pointing out that Part IV of the Interstate Commerce Act fixed the transition period at 18 months, Senator Reed said that when an 18 months extension was approved in 1943, there was "a clear understanding that no further extension would be approved by the committee." He predicted that the forwarders would be back again for a further extension when the new nine-months period expires. The Kansan was not unmindful of the fact that the extension was favored by the War Department, O. D. T. and W. S. A.; but he was "not impressed" with the weight of their reasons therefor. And he was "certainly not impressed" with the I. C. C. letter which embodied its adverse report on an indefinite extension.

"That letter," he went on, "is a complete example of incompetency and muddled thinking. Unfortunately the commission has an oversupply of both. Members of the commission broke up into groups. Between the groups opinions were expressed that were thoroughly inconsistent and irreconcilable. Some views expressed in the letter 'meet themselves coming back.' . . .

"The Interstate Commerce Commission is a horrible example of an institution with a strong early history in which it established a reputation which became a tradition commanding the respect of the country to a greater degree than any other administrative tribunal. If, in these days, the high respect with which the commission was formerly regarded has been lessened in an extraordinary degree this, and numerous other examples familiar to those who keep in touch with the commission's activities, will explain."

N. M. B.'s Cole Forgot Army Control of Roads

Didn't have nationwide case in mind as example of government seizure

Robert F. Cole, secretary of the National Mediation Board, did not have in mind the 1943 year-end strike threat, which brought on War Department operation of the railroads, when he was asked a couple of months ago to illustrate railway wage adjustment procedures by tracing a specific case that had gone all the way from an initial demand of labor to government seizure of railroad properties. The incident occurred at March 21 hearings before a House appropriations committee subcommittee which was considering proposed N. M. B. and National Railroad Adjustment Board appropriations for inclusion in the Labor-Federal Security Appropriation Bill for the fiscal year ending June 30, 1946.

Big "Take-Over" Ignored—Mr. Cole was asked by Representative Keefe, Republican of Wisconsin, to "give us an illustration that has resulted in the government appointing a few corporals and generals and taking over the railroads." Mr. Cole replied that there had been "very little government taking-over," but he did recall "a recent case where a dispute arose with regard to the placing of a second man on electric Diesel locomotives that work in the big open-cut mines out in Utah."

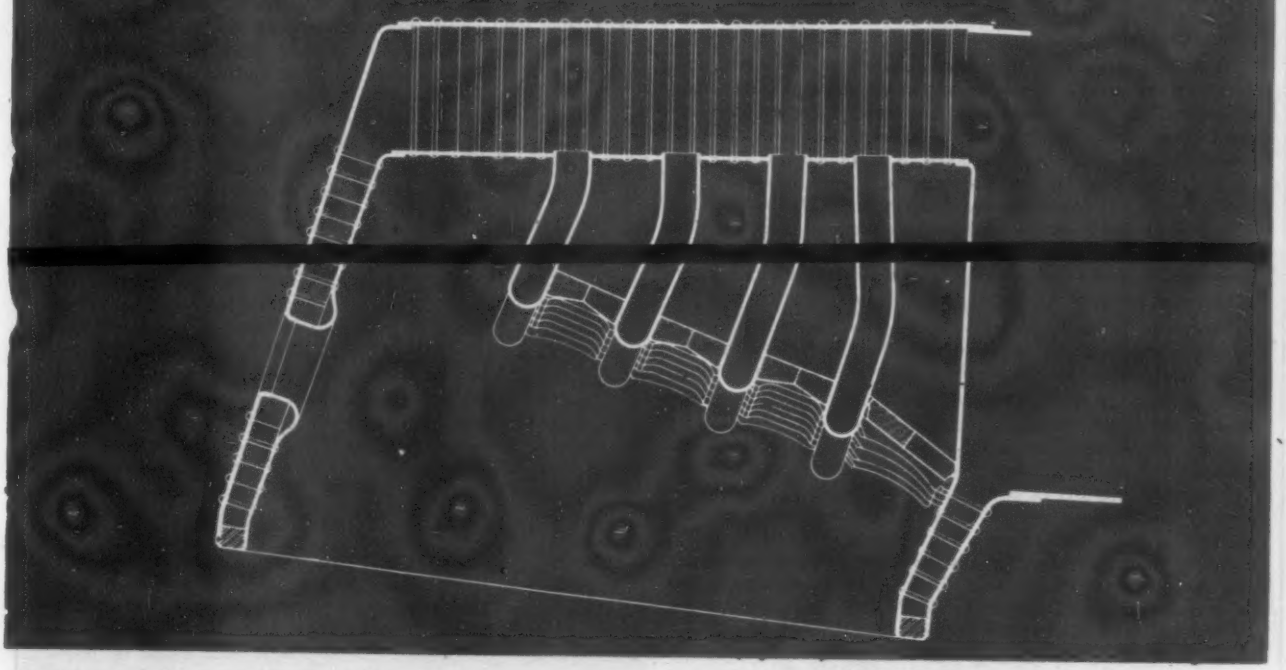
That was the Bingham & Garfield case (noted in the *Railway Age* of February 3, page 276) where the President directed the Secretary of War to take over after a strike had got under way following rejection by the employees, represented by the Brotherhood of Locomotive Firemen & Enginemen, of an emergency board report which found no need for the addition of a "fireman" to the crews of the locomotives involved.

Mr. Cole traced the dispute from its beginnings, saying that it was "the only case this year where the railroads were taken over." The N. M. B. secretary then went on to recall "one earlier case on the Toledo, Peoria & Western," adding that "all" of the other disputes "have adjusted somewhere along the line, either through mediation or arbitration or emergency board reporting that there has been a satisfactory adjustment made."

His Memory Is Freshened—At this point Representative Keefe broke in to say: "My recollection was—you say this is the only one you have notice of, but it seems to me that I recall quite distinctly one that threatened pretty near all the roads of this country, where the President

News Department continued on next left-hand page

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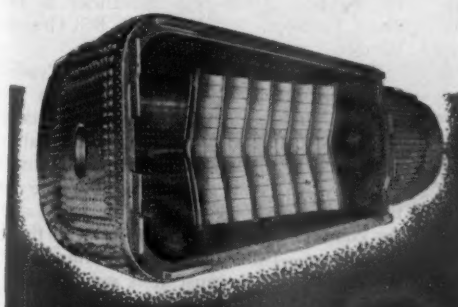
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Security Circulators are adaptable to any type of locomotive and to any size of firebox.

They increase the strength of the firebox structure and help to prevent boiler distortion.

They form an ideal support both for crown sheet and arch brick, and permit the use of a 100% arch in any type of firebox.

The installation of Security Circulators makes locomotives available for continuous operation over longer periods of time. Such locomotives have better combustion and longer arch life with less flue plugging and less cinder wear, so that a minimum of boiler maintenance is required.



AMERICAN ARCH COMPANY, Inc.

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SECURITY CIRCULATOR DIVISION

Formula for a Sound National Transportation Policy

The Railroads and Public Welfare, by Emory R. Johnson. 366 pages. 6 in. by 9 in. Bound in cloth. Published by Simmons-Boardman Publishing Corporation, New York. Price, $3.

There are not many men living today who have studied transportation—always from the point of view of the interest of the public as a whole, rather than of any specialized segment of it—so long and intensely as Professor Johnson has. When so capable and disinterested a witness as he describes the conditions which are set forth in this book, the effect should be to put on the alert all people with the wit to comprehend his message and the patriotism to be concerned with the significance of his warning.

This book reviews transportation development in the two decades between the world wars, and the adverse effect upon railroad traffic and revenues of the rapid, force-fed development of newer transport agencies—a deterioration in the railroads' position which was climaxed by a sudden war-time call by the nation upon its neglected railroads for a transportation performance of unprecedented magnitude. The nation has thus had dramatically demonstrated its continuing dependence upon railroad service to a degree far beyond that of its pre-war appreciation of the indispensability of this service and willingness to encourage its further expansion and development.

Professor Johnson reviews the various important factors which entered into the lean situation in which the railroads found themselves at the beginning of the present conflict.

Of railway labor, he observes that wages paid "have been such as to bring an adequate labor force," but he questions that railway capital was in the pre-war years attracted to the industry in satisfactory amounts by the "wage" awarded to it. "Unless the interests of stockholders are given due consideration by labor unions and government," the author warns, "the welfare of labor will suffer." He believes that strikes in the railroad industry should be declared illegal and that wage disputes should be subject to arbitration, final authority to rest in boards on which there should be representation of the "public" as well as of the disputants.

In rate relationships among different agencies of transportation, the author favors the establishment of competitive charges based primarily on the relative costs of service of the competing agencies. He believes also that "coordination of railroad and other transportation facilities" would be to the public advantage. He advocates a "single classification of freight for the entire United States" and greater harmony in class rates as between territories—these objectives to be secured, however, "by cooperative efforts of shippers and carriers under impartial leadership of the Interstate Commerce Commission," rather than by mandatory legislation. He considers the prospective advantages of consolidation of the railroads into a limited number of systems to be sufficiently attractive to justify such mergers by legal compulsion if they are not initiated voluntarily.

The author reviews the complex and controversial question of governmental aid to transportation—contrasting the public advantage of such aid extended to the railroads in the past century when the country suffered from inadequate transportation facilities and that granted to waterways and highways in the 1930's when there was "a manifest and increasing surplus of transportation facilities."

Of governmental aid to waterway development, the author concludes that "each proposed project should be required to pass the same test that a new railroad is obliged to pass—the test of public convenience and necessity . . . by the Interstate Commerce Commission or some other equally unprejudiced and impartial board." Of governmental aid to highway transportation, his conclusion is that there is "some real doubt as to whether the present vehicle users of the highways and streets, especially the owners of the larger types of vehicles, really pay their full share of the annual highway costs." They are also favored, to the prejudice of the railroads, since they are "users of a tax-free public facility." The costs of each form of transportation, the author insists, "should be borne by those for whom services are rendered."

Private versus government ownership and operation of the railroads is discussed, with the preponderant evidence favoring private operation. But continued private operation requires that the government adopt a consistent policy toward transportation as a whole, and not favor other agencies to the railroads' detriment—otherwise private capital will scarcely be attracted to the railroads in a quantity adequate to their satisfactory functioning; and equal governmental treatment of labor of the different agencies of transport is also requisite, lest arbitrary inequality in this important aspect of costs inhibit some agencies from demonstrating their inherent economy.

The experience of the war has proved beyond all possibility of cavil the indispensability to the nation of a vigorous and flourishing railroad industry. The meager earnings and inadequate capital supply of the railroads immediately prior to the war (which has given them, temporarily, a spate of traffic and removed their competitors, also temporarily, as serious contenders for traffic) showed that the nation does not have a transportation policy which will enable the railroads to regain and retain their vigor in time of peace. In this book, a learned counsellor has given the essential ingredients of a revision in the national policy toward transportation which will fit reality. His book offers practical and profitable reading matter for anyone with the remotest interest in the future adequacy of America's transportation—and who prefers to receive this service at the hands of private enterprise rather than under the terms and conditions laid down by a domineering socialist bureaucracy.

had to take them over because the economic stabilizer would not approve a wage increase of eight cents an hour which had been approved across the board, and they finally threatened to carry out their strike vote and the President in the exercise of his power did seize the railroads and the wage increase was granted, and then they were turned back. Generally speaking, it seems to me that is the outstanding example of the process. Did you have that in mind?"

Mr. Cole made this reply: "Generally speaking, I did not. You are correct in your statement, Mr. Congressman. The take-over was of such short duration that I had not figured on using that as an example. However, it was the largest case of its kind, that is true."

[As noted in the *Railway Age* of January 27, page 244, N. M. B.'s latest annual report for the fiscal year ended June 30, 1944, had characterized that period, which saw the nationwide strike threat bring on War Department operation, as a time when "by and large" the "no-strike pledge" of the labor organizations "was observed."]

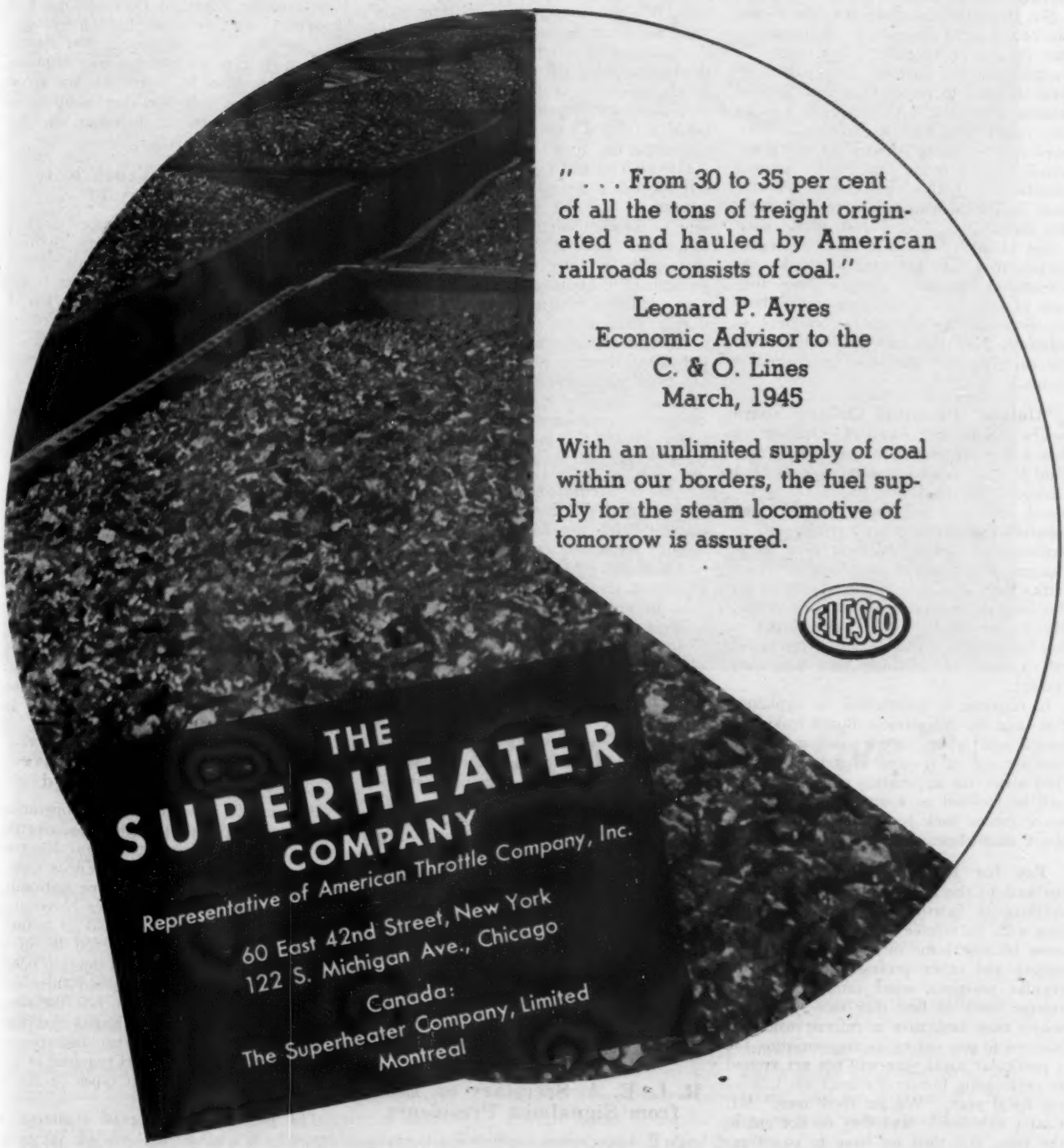
"Quid" Without "Pro Quo"—Appearing before the appropriations subcommittee with Mr. Cole were two of N. M. B.'s three members—Chairman H. H. Schwartz and Frank P. Douglass. Mr. Schwartz is also chairman of the National Railway Labor Panel which was created by Presidential order in 1942 to provide war-time procedures whereby labor organizations can get emergency boards appointed without first taking strike votes. As Mr. Schwartz put it, the panel was created "to give the employees a quid pro quo under the no-strike pledge."

He went on to report that there have nevertheless been "some strike votes," but "they come up really under a situation that was not heretofore contemplated." In the latter connection Mr. Schwartz was referring to disputes arising over the application of Adjustment Board awards; and he mentioned specifically the recent cases on the Central of Georgia, Kentucky & Indiana Terminal, and Denver & Rio Grande Western.

"The men," Mr. Schwartz said, "voted to strike because they feel that when the carriers and the employees have finally submitted employee grievances under labor contracts to the National Railroad Adjustment Board, and an award is made in favor of the men it ought to be paid; and the complaint of the men has been in these three cases—I do not know anything about the merits of it because it is not my business—but there has been a large accumulation of awards in favor of the men that for one reason or another have not been

News Department continued on next left-hand page

COAL TRAFFIC



" . . . From 30 to 35 per cent of all the tons of freight originated and hauled by American railroads consists of coal."

Leonard P. Ayres
Economic Advisor to the
C. & O. Lines
March, 1945

With an unlimited supply of coal within our borders, the fuel supply for the steam locomotive of tomorrow is assured.

ELESCO

THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42nd Street, New York
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paid; so, in order to get action, they took a strike vote. . . . The President set up boards to pass on these questions and the men did not strike. . . ."

Strike Despite Pledge—With respect to the latter, the emergency board which heard the D. & R. G. W. dispute found that there was a strike in that instance at least. As noted in the *Railway Age* of April 14, its report (made after Mr. Schwartz's testimony was given) revealed that when the board convened in Denver to hear the case "a strike had actually gone into effect at different main-line terminals for periods varying from 55 minutes to eight hours."

Mr. Douglass' contribution to the discussion of the strike situation was a suggestion that the "no-strike policy" has caused "a tendency on the part of some parties to these disputes to rather drag their feet on making settlement." As he sees it, a strike may result from such a situation, for the employees are being "driven" to emergency boards "more often than under normal conditions." Following through on the same line, Chairman Schwartz later made this statement: "Can I just advise what I just heard: A number of labor organizations men have indicated to me, in conversations, that they thought since they have agreed not to strike, they haven't been so successful in getting the carriers to arbitrate. Now that may be a reflection on the carriers, but they have presented it to me."

"Unique" Describes Chicago Board—The National Railroad Adjustment Board was represented at the hearings by Paul M. Carter, a labor member of its First Division. He explained the work of the board, calling it a "unique" agency; and reported that, while many have studied its workings and expressed their ideas as to changes which might be made, all such critics have also said "strange as it seems this unique arrangement seems to work." Mr. Carter thinks so, too. As he put it, "we have had less trouble, less tieups under this system, of anything that was ever created."

In response to questioning, he explained that once the Adjustment Board makes an award and serves notice on the parties, "we are out of it—and whatever happens then about the application of the award—will be handled as a separate dispute. It never comes back to us. Mr. Schwartz's board might hear of it."

Pay for Referees—Mr. Carter also outlined to the subcommittee some of the Adjustment Board's problems in connection with its referee funds. The problems arise because some of the referees, being judges and other professional men with regular positions, must sandwich in the referee work as best they can. Thus the board may find that a referee whom it planned to pay out of its appropriation for a particular fiscal year will not get around to performing his service until the following fiscal year. "We get these men," Mr. Carter explained, "and they do not put in the time, and then we have to pay them next year for what should be this year's work. We will have an accumulation of 200 or 300 cases that should have been decided this year that will have to be paid for next year because the referee could not do the work before July 1.

Funds for Mediation Board—The foregoing testimony, which had been received in executive sessions, was made public this week when the appropriations committee reported the Labor-Federal Security bill to the House. As reported, the bill carries a total of $591,400 for the Mediation Board and Adjustment Board during the fiscal year ending June 30, 1946. Except for the committee's cut of $75 in the allowance for the cost of handling penalty mail, this is the amount recommended by the Bureau of the Budget. While it is $65,717 less than the $657,117 appropriated for the current fiscal year, the latter figure included $48,677 for the payment of overtime compensation to employees under the act of May 7, 1943, which expires next June 30. There will perhaps be a supplemental request for additional fiscal 1946 funds if new legislation continuing the overtime is enacted.

For salaries and expenses of N.M.B. itself the bill proposes a fiscal 1946 appropriation of $218,300, which, with the overtime factor eliminated, becomes comparable to a figure of $200,125 for the current fiscal year. The increase of $18,175 is for the purpose of continuing the employment of four additional mediators added to the staff during the current fiscal year. In this connection the committee's report on the bill called attention to N.M.B.'s backlog of unsettled cases, adding that "the full amount of funds approved by the Bureau of the Budget is recommended in the hope that a better record of production during the coming year will be shown."

More Mediators Sought—As noted in the *Railway Age* of April 14, page 680, the Railway Labor Executives' Association recently advocated increased appropriations which would enable N.M.B. to employ 15 additional mediators. R.L.E.A. stated its case in an April 3 letter to Chairman Cannon of the appropriations committee; and the letter, "received subsequent to the close of the hearings," was included "for the information of interested parties," in the printed record of N.M.B.'s March 21 presentation before the appropriations subcommittee.

Under the reported bill the fiscal 1946 appropriation for arbitration and emergency boards would be $100,000, down $50,000 from the current year's $150,000. The appropriation for salaries and expenses of the Adjustment Board, $252,400, would be up $4,802 when allowance is made for the overtime factor in the appropriation for the current year. The $4,802 would provide for certain promotions and for the employment of one additional employee. The remainder of the N.M.B. total consists of the proposed appropriations for printing and binding—$2,500 for itself and $17,500 for the Adjustment Board, both the same as the current year.

R. L. E. A. Secretary on Leave from Signalmen Presidency

A. E. Lyon, whose appointment as executive secretary of the Railway Labor Executives' Association was noted briefly in the *Railway Age* of May 5, page 810, will serve in that position while on leave of absence from the presidency of the Brotherhood of Railroad Signalmen. Meanwhile, Jesse Clark, secretary-treasurer of the B. of R. S. has been elected president for the period of Mr. Lyon's absence.

In the R. L. E. A. post, Mr. Lyon succeeds Julius G. Luhrsen, who resigned to assume his duties as labor member of the Railroad Retirement Board, succeeding Lee M. Eddy. Mr. Luhrsen's appointment to R. R. B. was made by the late President Roosevelt and confirmed by the Senate on March 26.

Mr. Lyon was born at Thedford, Neb., October 15, 1899, and he entered railroad service in the Southern Pacific's signaling department in December, 1919, after having served a year in the United States Army. Prior to his election to the presidency of the B. of R. S. in 1934, Mr. Lyon had served his union in the position of local chairman, general chairman, and assistant to the president.

Middle Atlantic Truck Rates Went Up May 14

General increases in truck rates in Middle Atlantic territory and between that territory and New England territory became effective on May 14 when the Interstate Commerce Commission, Division 2, voted not to suspend tariffs making emergency charges of one cent per 100 lb. on truckload shipments and 2½ cents per 100 lb. on less-than-truckload shipments. As noted in the *Railway Age* of May 5, page 809, similar increases recently became effective in New England territory.

The Middle Atlantic and New England tariffs had been protested by the Office of Price Administration. In announcing Division 2's refusal to suspend the Middle Atlantic tariffs, the commission revealed that it had directed its Section of Accounts, Bureau of Motor Carriers, to examine the financial position of representative motor carriers in both territories "for the purpose of obtaining further information to aid the division in determining whether an investigation should be instituted concerning the reasonableness, and lawfulness otherwise, of the emergency charges in these territories."

Turbine-Electric Locomotive Project Moves Forward

Progress is reported in the cooperative development of a steam-turbine—electric locomotive, in which the General Electric Company and the Babcock & Wilcox Company are participating with nine railroads, which has been under way since November 7, 1944. Using pulverized coal as a fuel, steam will be generated at 650 lb. in a high-pressure boiler and will develop 6,900 shaft horsepower in the non-condensing steam turbine which will operate the electric generator. It is anticipated that this fuel will produce a drawbar horsepower hour for two-thirds the fuel required in the most efficient conventional types of steam locomotives now in service.

The project, according to a statement issued by officers of the Norfolk & Western, is proceeding in two steps: first, the design and construction of the boiler and the design of a locomotive frame to support it; second, if tests prove satisfactory, building



Which one is the freight locomotive?

BOTH are! And both are passenger locomotives, too. They're actually *interchangeable*.

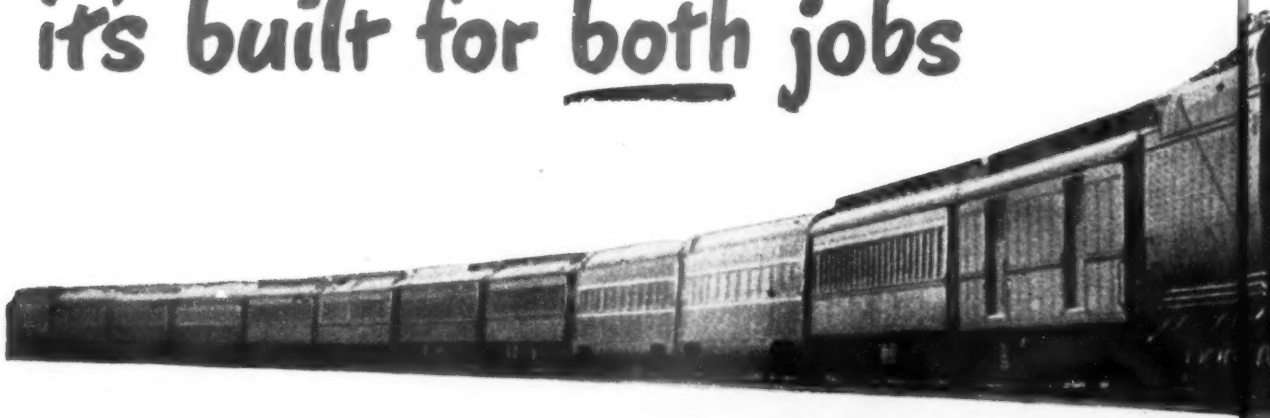
This is important to the railroads because, until recently, freight and passenger locomotives were built differently—one primarily for *hauling power*, the other mainly for *speed*.

Today, however, out of American Locomotive's hundred years' experience have come locomotives that are truly multipurpose. Like the "Niagara" locomotives shown above, latest result of close co-operation between The New York Central and American Locomotive designers, these locomotives can haul fast freights one day and crack passenger trains the next. Moreover, they may be steam or diesel-electric or any modification of either type. It doesn't matter whether they are powered by coal or oil—the important thing is economy of performance.

This development helps reduce the number of locomotives a railroad must buy and maintain to do its job. And that's important. For it is out of *savings* that a railroad gets the money to make improvements in service.

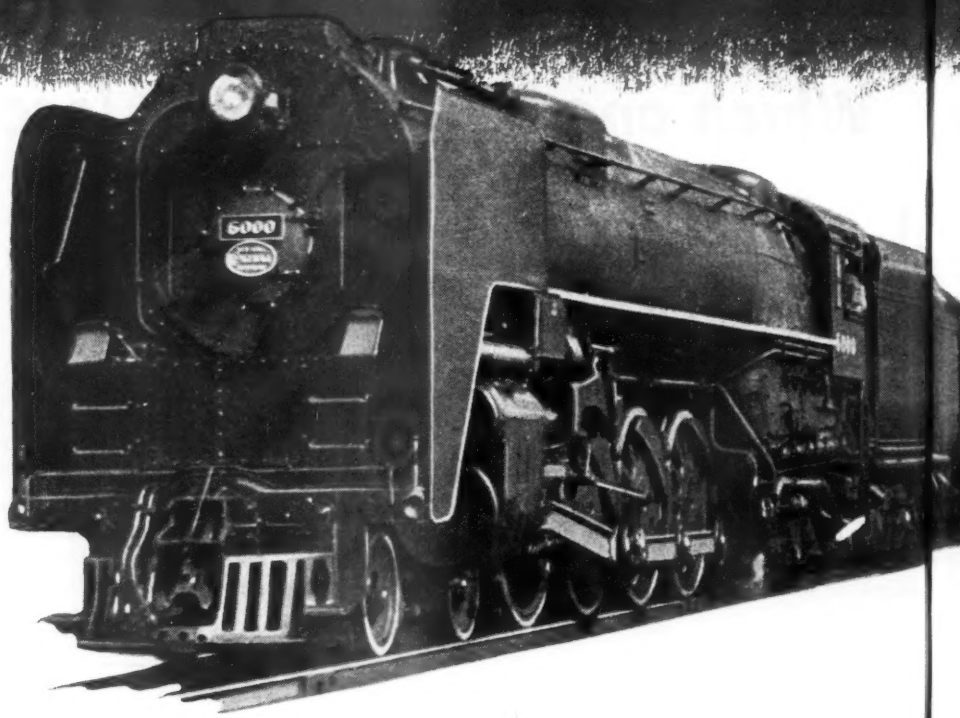
This is just one of many developments that will contribute to finer postwar railroad service. And it is significant that it comes from the Company that built the world's largest steam locomotive, had a share in giving America its first diesel-electric locomotive, and has supplied an important share of the locomotives now being used for war purposes by the United Nations.

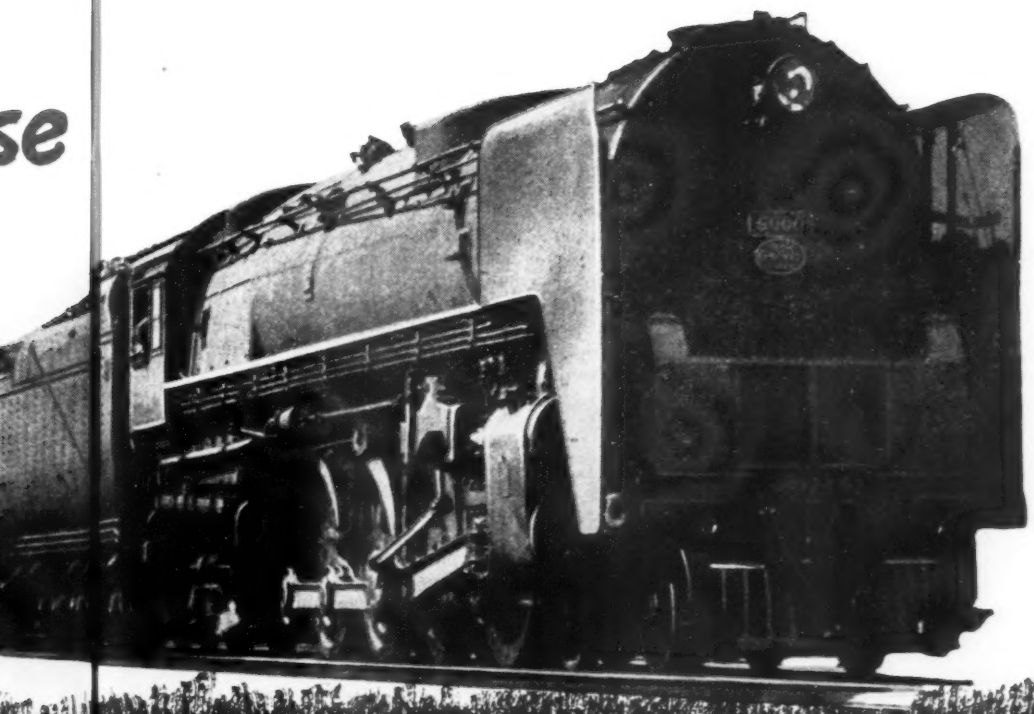
Right for both jobs because it's built for both jobs



THE trains you see on these two pages are being pulled by the New York Central's new dual-purpose locomotive, the "Niagara."

Built by the American Locomotive Company, in close co-operation with the New York Central, it is designed to pull the System's crack passenger liners and also meet the demands for high speeds in hauling freight. Locomotives that possess the *interchangeability* of the "Niagara" promise many benefits. They can help reduce the expense many railroads have had to bear in buying, operating and maintaining powerful locomotives for heavy freight hauls and faster, less powerful locomotives for lighter passenger runs.





They can provide a new kind of operating efficiency by building up extra power needed for tough jobs, and conserving power on the easier tasks.

And, perhaps most important of all, they can open new roads to undreamed-of economies—savings that will be shared by thousands.

American Locomotive

Alco

THE MARK OF MODERN LOCOMOTION



the locomotive and testing it in service. The boiler is expected to be ready for tests early in June.

Cooperating with the General Electric and Babcock & Wilcox Companies on this project are the Baltimore & Ohio, the Chesapeake & Ohio, the Illinois Central, the Louisville & Nashville, the New York Central, the Norfolk & Western, the Pennsylvania, the Reading, and the Virginian.

April Ton-Miles

The volume of freight traffic handled by Class I roads in April amounted to 62,300,000,000 ton-miles, according to a preliminary estimate based on reports received by the Association of American Railroads. The increase over April, 1944, was almost three and one-half per cent.

Revenue ton-miles of service performed by Class I roads in the first four months of 1945 was one and one-half per cent under 1944, although four per cent greater than the corresponding period two years ago.

The accompanying table summarizes revenue ton-miles for the first four months of 1945 and 1944.

	1945	1944	Per cent Change
January	56,845,141,000	60,487,997,000	Dec. 6.0
February	55,462,959,000	59,306,333,000	Dec. 6.5
March	[1]64,300,000,000	62,670,213,000	Inc. 2.6
April	[2]62,300,000,000	60,288,986,000	Inc. 3.3
Total 4 months	238,908,101,000	242,753,526,000	Dec. 6.0

[1] Revised estimate.
[2] Preliminiary estimate.

Kentucky Derby Will Remain Street-Car Event

The Office of Defense Transportation has announced that the plan made by the Churchill Downs management to restrict attendance at the 1944 Kentucky Derby to residents of Louisville, Ky., and vicinity, will be followed again this year. Under the plan, no Derby tickets will be sold to persons outside the Louisville area except to allow regular box holders to retain their boxes for future years, by paying for the box for occupancy by service men of the area.

This year as in the two preceding years, there will be no special or extra trains or extra railroad passenger cars available for travel to Louisville for the Derby. The use of chartered or special buses to or from the track will not be permitted. The recent lifting of the ban on horse racing in the United States, said O. D. T. Director J. Monroe Johnson, will not modify the restrictions on transportation which confine attendance at races to persons living near enough to use local transit facilities.

Representation of Employees

The Brotherhood of Railroad Trainmen has supplanted the Order of Railway Conductors as the Railway Labor Act representative of Western Maryland road conductors, according to results of a recent election which has been certified by the National Mediation Board. The vote was 55 to 45.

In another recent election, among patrolmen, sergeants, and watchmen in the Louisville & Nashville police department, the board was unable to make a certification for the reason that no organization or individual received a majority of the legal votes cast. The election, in which 133 employees were found eligible to vote, had been requested by the National Council of Railway Patrolmen's Unions, American Federation of Labor. That union received 60 votes, while votes ranging from one to 22 were cast for 19 individuals; and the L. & N. itself got seven votes which N. M. B. voided "because the carrier is neither an individual nor an organization as contemplated by the Railway Labor Act, and therefore cannot be an employee representative for purposes of the Act."

On the Atchison, Topeka & Santa Fe, the dispatchers have chosen the American Train Dispatchers Association. They were previously represented by G. H. Minchin, the road's operating vice-president. On the Chicago, Aurora & Elgin, the Brotherhood of Railroad Signalmen has supplanted the Amalgamated Association of Street, Electric Railway and Motor Coach Employees as representative of signal department employees; while the previously unrepresented technical and engineering employees in the New York, Chicago & St. Louis' civil engineering and mechanical engineering departments have chosen the Group of Professional and Engineering Employees.

The Brotherhood of Sleeping Car Porters has supplanted the Brotherhood of Trainmen, Brakemen, Porters, Switchmen, Firemen and Railway Employees, Inc., as representative of train porters, mail handlers and train attendants employed by the Gulf, Mobile & Ohio. Boilermakers, their helpers and apprentices employed by the Houston Belt & Terminal have chosen the International Brotherhood of Boilermakers, and the coal cranemen on the Atlanta, Birmingham & Coast have chosen the Brotherhood of Railroad Carmen, both of which organizations operate through the Railway Employees Department, A. F. of L.

Emergency Board Report

The White House last week made public the report of an emergency board appointed by the late President Roosevelt on April 7 to investigate a dispute which had brought a strike threat to the Missouri Pacific. The employees were represented by the Brotherhood of Locomotive Firemen & Enginemen.

The dispute involved principally a disagreement as to the application of the Interstate Commerce Commission's order on automatic stokers, although there were other issues involving claims of individual B. of L. F. & E. members. Most of the report is devoted to the stoker issue, and the board recommended specific provisions for incorporation in agreements covering the application of the order to locomotives used in transfer service, mine service, pusher and helper service, branch line and local service, and on troop, circus and silk trains.

Other issues, on which the board also gave its views, involved the handling of stoker failures; time claims of engineers and firemen required to supply engines with fuel and water on line when such supplies were not needed for completion of the trip; time claims of engineers, firemen, hostlers, and hostlers helpers, based on engine crews' handling of engines between train and roundhouse; and protests of firemen against places assigned to them on the engineers seniority roster.

In concluding its report the board expressed its view that most of the cases could have been presented to the National Railroad Adjustment Board. It added that the emergency-board provisions of the Railway Labor Act "should be resorted to only in cases of emergency, after all the intervening steps provided by the Act have been taken."

"No employee organization," the report continued, "should resort to the use of a strike ballot for the purpose of avoiding the necessity of taking these intervening steps. If this should become a practice, the general plan of handling railroad labor disputes at present would be gravely jeopardized. The fact that there is at present delay in processing claims through the First Division of the Adjustment Board, does not justify the failure to file with that division claims properly within its jurisdiction. Instead both parties should exert every effort to overcome such delay and to remedy the situation."

Members of the board were Chairman H. Nathan Swaim, former justice of the Supreme Court of Indiana; Leif Erickson, former justice of the Supreme Court of Montana; and Robert W. Woolley, Washington, D. C., attorney and former member of the I. C. C.

Another Airport Bill

Chairman Lea of the House committee on interstate and foreign commerce has introduced H. R. 3170 "to provide federal aid for the development of public airports and to amend existing law relating to air navigation facilities." Committee hearings on the bill were begun May 15.

As noted in the *Railway Age* of May 5, page 810, another federal-aid airport bill is pending before the Senate. It is S. 2, sponsored by Senator McCarran, Democrat of Nevada.

April Export Traffic

Export freight, excluding coal and grain, handled through United States ports in April totaled 191,802 cars, compared with 148,256 cars in the same month last year, or an increase of 29 per cent, according to the Association of American Railroads.

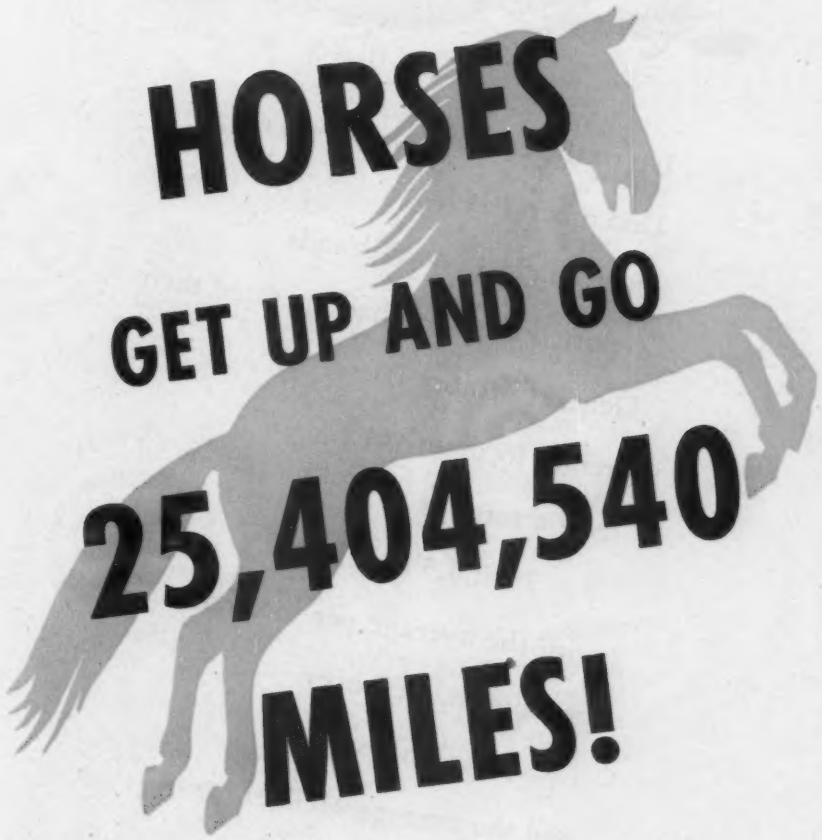
Export grain unloaded at the ports in April totaled 13,472 cars, compared with 2,390 in April, 1944, or an increase of 464 per cent. Railroads handled 796 carloads of coastal freight in April, 1945, compared with 728 in the same month in 1944, or an increase of nine per cent.

The total of 206,070 cars of export and

News Department continued on third right-hand page

IT'S A GREAT NEW DAY FOR RAILROADING

911,250
HORSES
GET UP AND GO
25,404,540
MILES!



GENERAL MOTORS
LOCOMOTIVES



Up to the end of
December 1944,
thirteen class one railroads
reported that they had operated their
General Motors Diesel
freight locomotives
over a total of
25,404,540 miles
with the average per locomotive,
per month, well over
9,000 miles
and the average MGTM
per hour running around
60.000

IT'S A GREAT NEW DAY FOR RAILROADING

These locomotives
have been in
regularly scheduled
freight service for periods
varying from 3¾ years
to a few months.

The oldest railroad,
in point of service,
rolled up 9,848,677 miles —
handling 29,862,941 MGTM at the
rate of 62.792 per hour.

The youngest railroad
with three months of service,
127,210 miles —
handling 477,269 MGTM
in 6,345 hours of operation.

Average availability for all
thirteen railroads — 87.8%.

GENERAL MOTORS
LOCOMOTIVES

IT'S A GREAT NEW DAY FOR RAILROADING

"PLANNED PROGRESS"

One important railroad says:

"Our 5400-horsepower Diesel freight locomotives pull 125 loaded freight cars, approximately 6,400 tons — at a speed of 75 miles an hour. We are proud that the progress we planned yesterday made us ready for today's big job — ready to perform a vital service in this war emergency. Our program of *planned progress* has been, and is, a continuing effort."

And there is nothing like General Motors Diesel passenger, freight or switcher locomotives to provide the finest in transportation.

ON TO FINAL VICTORY
BUY MORE WAR BONDS

GENERAL MOTORS
LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION
LA GRANGE, ILL.

coastal freight, excluding coal, handled through the ports in April this year represented an average daily unloading of 6,869 cars, the highest on record. The previous high was 6,713 cars established in March this year.

Freight Car Loading

Loadings of revenue freight for the week ended May 12 were not available at the time this issue went to press.

Loading of revenue freight for the week ended May 5 totaled 863,399 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, May 5

District	1945	1944	1943
Eastern	158,213	162,359	159,203
Allegheny	185,439	190,857	180,781
Pocahontas	51,629	54,811	47,794
Southern	130,015	123,653	120,320
Northwestern	132,921	120,922	115,259
Central Western	126,066	117,530	119,482
Southwestern	79,116	65,406	73,699
Total Western Districts	338,103	303,858	308,440
Total All Roads	863,399	835,538	816,538
Commodities			
Grain and grain products	52,333	38,388	45,621
Live stock	17,629	15,857	15,688
Coal	143,342	170,672	142,140
Coke	15,279	14,407	13,523
Forest products	43,052	43,652	44,792
Ore	73,702	69,083	66,979
Merchandise l.c.l.	112,787	106,346	98,125
Miscellaneous	405,275	377,133	389,670
May 5	863,399	835,538	816,538
April 28	899,221	850,441	788,789
April 21	864,063	838,737	794,163
April 14	846,391	798,683	780,908
April 7	764,763	787,985	789,019
Cumulative Total, 18 Weeks	14,307,705	14,340,237	13,781,327

In Canada.—Carloadings for the week ending May 5 totaled 70,062 as compared with 71,285 for the previous week and 70,948 for the corresponding period last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 5, 1945	70,062	36,783
May 6, 1944	70,948	39,578
Cumulative Totals for Canada:		
May 5, 1945	1,194,047	671,128
May 6, 1944	1,228,835	715,786

Money for Retirement Board

Appropriations totaling $294,135,000 for the Railroad Retirement Board for the year ending June 30, 1946, are carried in the Labor-Federal Security Appropriation Bill which was reported to the House from its committee on appropriations on May 14. Aside from a reduction of $6,000 in the amount allocated for the cost of handling penalty mail, the committee approved recommendations of the Bureau of the Budget.

The reduction of $17,246,000 under the appropriation for the current fiscal year is accounted for in large part by the $16,904,000 drop in the appropriation to the Railroad Retirement Account, the amount going to that account being $291,913,000 as compared with fiscal 1945's $308,817,000. The appropriations to the retirement account are the estimated collections under the Carriers' Taxing Act, together with adjustments for underestimates or overestimates for prior years and credits for government payments for prospective annuitants during the period of their military service. The military-service credit appropriation for fiscal 1946 amounts to an estimated $36,427,593.

The remaining $2,222,000 of the recommended appropriation is for the Retirement Board's expenses in connection with its administration of the Railroad Retirement Act. The current year's appropriation includes $2,564,000 for this purpose, but there is in that figure $330,049 for the payment of overtime compensation to employees under the act of May 7, 1943, which expires next June 30. When allowance is made for this overtime factor, the bill proposes for R. R. B. a net increase of about $12,000 in administrative funds as compared with its current appropriation.

With the reporting of the bill, the committee made public testimony with respect to the appropriations which was presented before one of its subcommittees by R. R. B. Chairman Murray W. Latimer. Mr. Latimer anticipated that the board would have a "substantially larger volume" of claims in fiscal 1946 than in 1945. He pointed out that many railroaders eligible to retire have remained in service during the war; and he expects that they will now begin to retire in large numbers.

Four years ago, Mr. Latimer said, there were 30,000 railroaders who were 65 years of age or older; now there are about 60,000. He also noted another development which is bringing an increase in the board's work—the greater number of death claims resulting from deaths of persons in the armed services. "About 20 per cent of our claims currently are based on deaths of persons in the armed services," Mr. Latimer said. "This is several times as many as we would normally get from that age group."

Union Pacific Is Winner Of Two New Safety Awards

The Union Pacific has won two important awards for an outstanding safety record among its employees in 1944. The awards were made by the National Safety Council. By establishing the best employee safety record among the largest railroads during last year the Union Pacific won first place in Group A (which includes roads whose employees work more than 50,000,000 man-hours) in the railroad employees' national safety contest. In addition the U. P. was awarded the Council's special war-time award for distinguished service for the second consecutive year.

* * *



Poster No. 262, July Installment of the "All the Year-Every Year Safety Program," Which Is Now Being Distributed by the Committee on Education, Association of American Railroads.

Short Line Discontinues L. C. L.

The Detroit, Caro & Sandusky discontinued handling L.C.L. shipments originating at points on connecting lines, effective with waybills dated after May 14. This 42 mile railroad extends from Caro, Mich., to Peck and connects with the Michigan Central at Caro, with the Grand Trunk Western at Wilmot and at Sandusky with the Pere Marquette.

Equipment and Supplies

LOCOMOTIVES

The Texas & Pacific is inquiring for two or three steam locomotives of 4-4-4-4 wheel arrangement.

The New York Central has issued inquiries for one experimental steam locomotive of 4-4-4-4 wheel arrangement.

The Mogyana Railway of Brazil has issued inquiries for nine steam locomotives of 2-8-2 wheel arrangement.

FREIGHT CARS

The Union Pacific is inquiring for 500 50½ ft. auto box cars of 50 tons capacity.

The French Railway Commission has issued inquiries for 2,000 four-wheel 30-ton composite gondola cars and 2,000 four-wheel 20-ton single sheath boxcars.

The Missouri Pacific has ordered 400 40½ ft. box cars of 50 tons capacity from the Pullman-Standard Car Manufacturing Company—200 for the St. Louis, Brownsville & Mexico and 200 for the International-Great Northern.

Construction

Chicago, Rock Island & Pacific.—This road has completed construction of a combination freight and passenger station at Pratt, Kan., which has been erected at a cost of $45,000. The building is of modern construction and measures 25 ft. by 133 ft. At the same time the Milwaukee is "streamlining" its station at Fairfield, Iowa, at an approximate cost of $20,000.

Southern.—This railroad has authorized the construction of two new cinder conveyors, a water crane, track changes, drainage, etc., at Birmingham, Ala., at estimated cost of $41,458. The work will be carried out by the company's own forces.

Seaboard Air Line.—This railroad has authorized and awarded contracts to grade and lay tracks for an extension of its yard at Abbeville, S. C., at estimated cost of $31,000.

Supply Trade

Gwilym A. Price has been appointed executive vice-president of the **Westinghouse Electric & Manufacturing Co.**, Pittsburgh, Pa. Mr. Price was elected vice-president of the company in September, 1943.

Walter Dorwin Teague, industrial designer and consultant for many industries, has extended his organization to the Pacific Coast, with new offices located in the Title Guarantee building, Los Angeles, Cal.

A. H. Englund, president and treasurer of the **Electric Service Manufacturing Company,** Philadelphia, Pa., has been elected chairman of the board and treasurer. **H. G. Lewis,** vice-president and general manager, has been elected president and general manager. **Russell Kreinberg** has been appointed vice-president and assistant general manager and **I. W. Schmidt,** western manager, has been appointed a vice-president with headquarters as heretofore in Chicago.

Lucien W. Moore has been appointed general manager of sales and branch houses for the **Crane Company,** Chicago, to succeed J. A. Dwyer whose election as vice-president in charge of sales and branch houses was reported in the *Railway Age* of May 12. **F. J. Wilkey,** district manager, Chicago, has been appointed manager of the valve and fitting department, the position occupied by Mr. Moore until his recent assignment to a special mission in France by the War Department. Mr. Moore will assume his new duties on completion of his present mission for the government.

L. H. Lund, treasurer since 1941; **William E. Miller,** general attorney in charge of the law and patent department since 1944, and **Ralph C. Stuart,** in charge of the lamp and lighting divisions, have been elected vice-presidents of the **Westinghouse Electric Corporation.** Mr. Lund and Mr. Miller have their offices in Pittsburgh, Pa. Mr. Stuart will administer the four plants of the lamp division at Bloomfield, Belleville and Trenton, N. J., and Fairmont, W. Va., and the lighting division's Cleveland, Ohio, plant from the lamp division headquarters at Bloomfield.

J. O'H. Anderson, manager of sales, tubular products, and **H. B. Spackman,** district sales manager, Philadelphia, Pa., office, have been appointed assistant general managers of sales of the **Jones & Laughlin Steel Corp. C. T. Hapgood,** assistant manager of sales, tubular products, succeeds Mr. Anderson as manager of sales and **E. W. Harwell,** district sales manager, Chicago office, succeeds Mr. Spackman as district sales manager at Philadelphia. **L. C. Berkey,** district sales manager, St. Louis, Mo., office, has been appointed district sales manager at Chicago and **C. C. Wehling,** district sales manager, Pittsburgh, Pa., office, has been appointed sales manager at St. Louis. **V. A. Jevon,** assistant general manager of sales, has been appointed in charge of the Pittsburgh district sales office. The Jones & Laughlin district office and the office of the **Jones & Laughlin Supply Co.** in Chicago have been moved to 135 South La Salle Street, that city.

Paul D. Curtis has been placed in charge of a new sales office opened by the **American Locomotive Company** in the First National Bank building, St. Paul, Minn. Mr. Curtis was graduated from Wisconsin University in 1928. He was connected with coal companies in a sales capacity until he became president of the Marquette Railway Supply Company in 1939. He was appointed assistant district sales manager of the American Locomotive Company's Chicago office on January 1, 1941, which position he held until his current appointment as district sales manager in St. Paul. **Charles F. Venrick** has been appointed assistant district sales manager in Chicago to succeed Mr. Curtis. Mr. Venrick was graduated from Dartmouth College in 1936 and joined the American Locomotive Company as a special apprentice at the Schenectady, N. Y., and other plants. He has been associated with the Chicago office as sales representative since 1938.

Nicholas H. Arnold, whose appointment to assistant to the vice-president of the **Standard Railway Equipment Company,** was reported in the *Railway Age* of May 12, was previously connected with the



Nicholas H. Arnold

Missouri Pacific at St. Louis, Mo., where he held various supervisory positions in the car department for nearly 18 years. In 1943 Mr. Arnold was appointed to the United States Railway Mission in Mexico where he assisted in the rehabilitation program of the National Railways of Mexico.

OBITUARY

Harold Freeman Barnes, manager of the General Electric Company's lamp department sales promotion division since 1931, with headquarters at Nela Park, Cleveland, Ohio, died May 8. He was 47 years of age.

Allan Wallace, retired director of traffic of the Johns-Manville Corporation, died May 7 in New York. Mr. Wallace, who was born in Hamilton, Ontario, entered the transportation field as an employee of the Grand Trunk Railway System, of which he became the general agent with headquarters at Omaha, Neb. He joined Johns-Manville as general traffic manager in 1914 and was appointed director of traffic in 1937. He retired in June, 1942.

Financial

ALTON.—*Promissory Notes.*—This road has applied to the Interstate Commerce Commission for authority to issue $314,000 of promissory notes in connection with the purchase under a conditional sale arrangement of 5 1,000-hp. diesel-electric switching locomotives from the American Locomotive Company at $78,500 each.

CHESAPEAKE & OHIO.—*Awards Equipment Trust.*—On May 14, the Chesapeake & Ohio awarded, subject to Interstate Commerce Commission approval, $2,500,000 of serial equipment trust certificates of 1945 to Salomon Brothers & Hutzler and associates, on a bid of 100.209 for a 1⅝ per cent obligation, an interest cost basis to the company of approximately 1.585 per cent. The certificates will be dated May 15, 1945, and mature in ten equal annual installments of $250,000 each, payable May 15 of each year starting in 1946. They are to be issued to finance in part the purchase of 990 50-ton all steel box cars, to cost approximately $3,256,476.

CHICAGO & EASTERN ILLINOIS.—*New Director Elected.*—D. W. Buchanan, president of the Old Ben Coal Corporation, Chicago, has been elected a member of the board of directors of the Chicago & Eastern Illinois, succeeding Chester L. Jones, New York, who has resigned.

CHICAGO & EASTERN ILLINOIS.—*R. F. C. Debt Retired.*—The Reconstruction Finance Corporation has announced that this road has retired the remainder of its indebtedness to that agency by the purchase at 103 of $9,400,000 of its series A first mortgage 4 per cent bonds. (Previous item in *Railway Age* of May 5, page 813). Altogether the R. F. C. had advanced to this carrier $10,849,500, all of which, together with $231,000 of securities taken over from the Public Works Administration, has been disposed of, with a premium to the R. F. C. of $285,015.

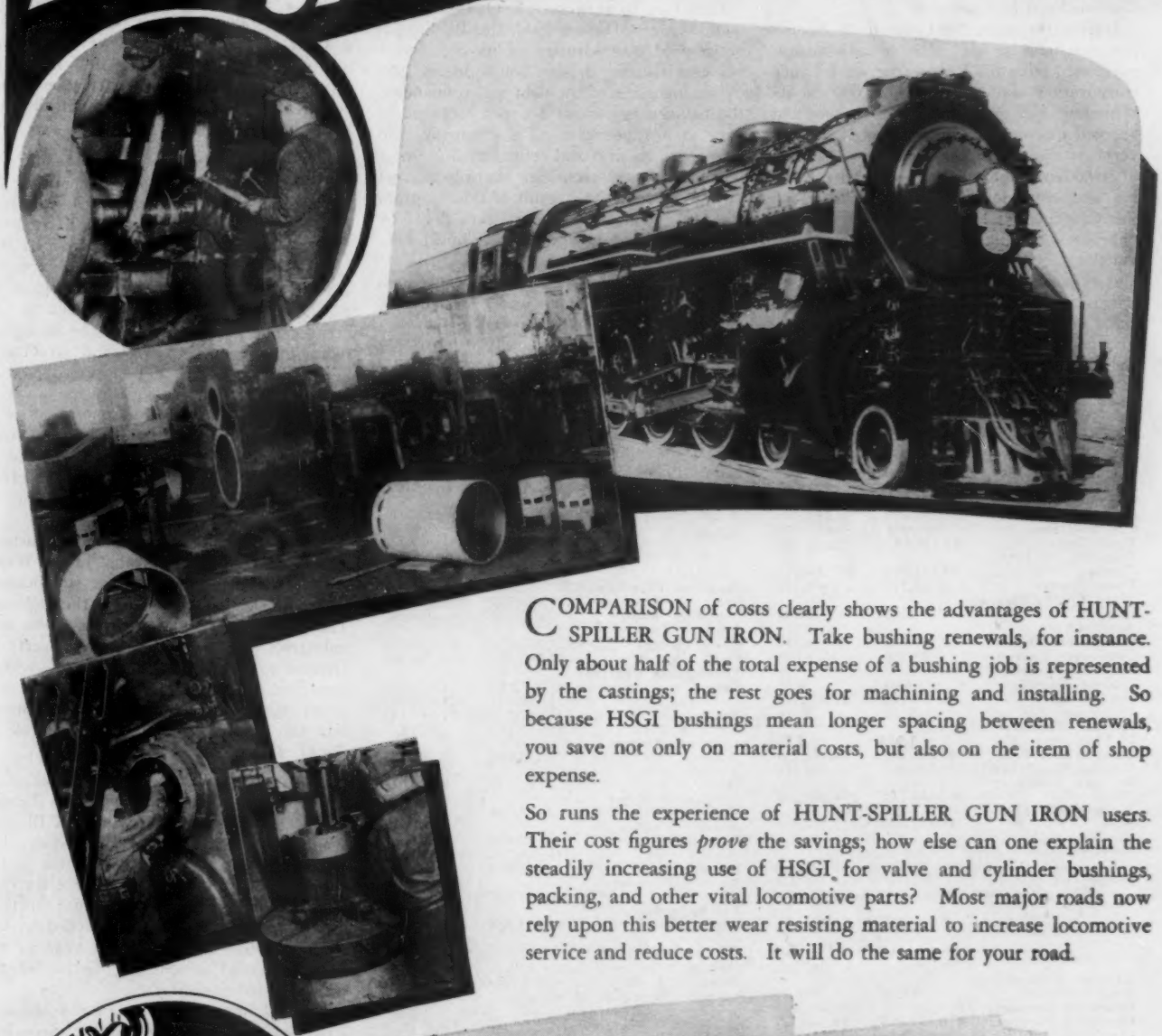
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Reorganization Expenses.*—Division 4 of the Interstate Commerce Commission has approved a maximum limit of $80,636 for expenses, other than attorneys' charges, by the reorganization committee in connection with the partial execution of the plan for reorganization of this road by the distribution of $52,038,036 of cash.

CHICAGO & NORTH WESTERN.—*Equipment Trust Certificates.*—Division 4 of the Interstate Commerce Commission has authorized this company to assume liability for $6,180,000 of 1¾ per cent equipment trust certificates, sold at 100.331 to the First National Bank of Chicago and others. The proceeds and other funds are to be employed in the acquisition of 1,000 70-ton hopper cars, 750 70-ton gondola cars, 250 70-ton selective hopper cars, and 20 streamlined passenger coaches, the total cost thereof being $8,270,000.

COLORADO & SOUTHERN.—*Annual Report.*—The Colorado & Southern and its Texas Lines provided more transportation in 1944 than in any previous year. Approximately 60 per cent of this transportation was directly or indirectly on account of war.

News Department continued on next left-hand page

HSGI VITAL PARTS SAVE ALL-WAYS



COMPARISON of costs clearly shows the advantages of HUNT-SPILLER GUN IRON. Take bushing renewals, for instance. Only about half of the total expense of a bushing job is represented by the castings; the rest goes for machining and installing. So because HSGI bushings mean longer spacing between renewals, you save not only on material costs, but also on the item of shop expense.

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Valve Bushings	Floating Rod Bushings	
Valve Packing Rings	Light Weight Valves	Cylinder Snap Rings
Valve Bull Rings	Cylinder Liners and Pistons for Diesel Service	Valve Rings, All Shapes

Both passenger miles and revenues in 1944 topped all previous records. Passenger revenues were 22.7 per cent above those in 1920, the highest pre-war year. Freight revenue increased 17.2 per cent over 1943 and was 6 per cent more than in the previous high year of 1926. Average freight rates in 1944 were lower than the pre-war level while wages and taxes were higher. As a result, in spite of a substantial increase in volume of traffic handled in 1944 over 1943, net income of the system lines declined 16.3 per cent.

During the year, the Colorado & Southern, pursuant to the plan of adjustment, purchased from the Reconstruction Finance Corporation and retired $3,600,000 of its refunding and extension bonds at par and accrued interest. The Fort Worth & Denver City also purchased from the R. F. C. $1,500,000 of Colorado & Southern refunding and extension mortgage bonds which were pledged under its note. These bond purchases, totaling $5,100,000, reduced the amount of Colorado & Southern refunding and extension bonds owned by the R. F. C. to $18,500,000, a reduction of $10,478,900 since May 1, 1935, the maturity date of the original issue. Highlights of operations of the Colorado & Southern, the Fort Worth & Denver City and the Wichita Valley are set forth below:

	Colorado & Southern	
	1944	1943
Average Miles of Road Operated	748.30	748.35
Operating Revenues	$17,031,687	$14,192,749
Operating Expenses	$11,306,063	$9,023,802
Operating Ratio	66.38%	63.58%
Total Taxes	$2,119,682	$1,614,384
Available for Fixed Charges	$3,634,209	$4,359,442
Fixed Charges	$723,521	$904,343
Times Fixed Charges Earned	5.02	4.82
Available for Contingent Interest	$2,727,547*	$3,316,314*
Contingent Interest	$552,366	$728,095
Times Contingent Interest Earned	4.94	4.55
Net Income	$2,174,779*	$2,588,219*
Dividends	None	None
Average Number of Employees	**1,913**	**1,718**
Total Wages Paid	$5,191,541	$4,363,554
Revenue Ton Miles	1,501,310,867	1,144,222,408
Revenue Passenger Miles	202,288,154	170,898,098
Reduction of Funded Debt	$5,161,000†	$11,318,866†

* After provision for Capital Fund.
† Includes Colorado & Southern bonds purchased and held by Fort Worth & Denver City as follows: 1944—$1,500,000; 1943—$9,796,500.

	Fort Worth & Denver City	
	1944	1943
Average Miles of Road Operated	804.34	804.34
Operating Revenues	$17,217,191	$15,691,278
Operating Expenses	$10,631,894	$8,040,589
Operating Ratio	61.75%	51.24%
Total Taxes	$2,718,210	$3,161,743
Available for Fixed Charges	$3,203,794	$3,839,472
Fixed Charges	$1,151,596	$1,147,467
Times Fixed Charges Earned	2.78	3.35
Net Income	$2,052,198	$2,692,006
Dividends	None	None
Average Number of Employees	2,058	1,724
Total Wages Paid	$5,288,036	$4,297,434
Revenue Ton Miles	1,207,052,101	991,427,376
Revenue Passenger Miles	274,006,334	261,831,930
Reduction of Funded Debt	$1,234,658†	$46,340

† Increase—Account equipment purchase.

	Wichita Valley	
	1944	1943
Average Miles of Road Operated	234.37	234.37
Operating Revenues	$742,898	$674,097
Operating Expenses	$563,921	$489,769
Operating Ratio	75.91%	72.66%
Total Taxes	$79,903	$83,713
Available for Fixed Charges	$22,707	$35,127
Fixed Charges	$226,834	$226,990
Times Fixed Charges Earned		
Net Income	$2,127*	$191,863*
Dividends	None	None
Average Number of Employees	105	107
Total Wages Paid	$257,453	$224,760
Revenue Ton Miles	33,279,881	28,224,698
Revenue Passenger Miles	1,014,320	1,278,275

* Deficit.

CHICAGO, BURLINGTON & QUINCY.—*Annual Report.*—During 1944, the Burlington anticipated the maturity of its 3½ and 4 per cent Illinois division bonds due in 1949 by paying some of the debt and refinancing the balance in part at 1½ per cent and in part at 3½ per cent. The company also refinanced its first and refunding 5 per cent bonds with new securities bearing interest at 3¾ per cent. The result of this program was to reduce the mortgage debt by $16,773,000 and interest charges by $1,400,000 annually.

All previous records for passenger and freight traffic handled were broken last year. Passenger-miles exceeded the previous high revenue year of 1920 by 69 per cent, but because fares were lower in 1944 than in 1920, passenger revenue increased only 10 per cent. Freight revenue of $180,000,000 was $14,000,000 more than in 1943. This outstripped the pre-war high figure of 1920 by $50,000,000, or nearly 40 per cent, although rates were lower in 1944 than in 1920. Highlights of 1944 operations follow:

	1944	Comparison With 1943
Operating Revenues	$240,637,400	+$22,684,917
Operating Expenses	$145,854,303	+$22,294,967
Operating Ratio	60.61%	+3.92%
Available for Fixed Charges	$33,387,498	−$3,812,508
Fixed Charges	$8,740,376	−$228,366
Times Fixed Charges Earned	3.82	−.33
Total Taxes	$57,190,637	+$1,616,993
Net Income	$24,647,122	−$3,584,142
Dividend Paid	$5,125,161	.....
Taxes per Share of Stock	$33.48	+$0.95
Net Income per Share of Stock	$14.43	−$2.10
Dividend Paid per Share of Stock	$3.00	.....
Average Number of Employes	33,618	+2,3??
Total Wages	$88,649,706	+$11,310,275
Revenue Ton-Miles	19,751,865,060	+791,477,570
Revenue Passenger-Miles	2,220,707,327	+398,510,138
Net Reduction in Funded Debt	12,074,765*	32,383,077†

* Includes $9,458,100 outstanding first and refunding 5 per cent bonds called for redemption February 1, 1945, for which cash has been deposited with trustee of mortgage.
† Two-year reduction.

GULF, MOBILE & OHIO-ALTON.—*Merger.*—The Gulf, Mobile & Ohio has asked the Interstate Commerce Commission for authority to carry out the agreement made by it with representatives of holders of the Alton's 50-year 3 per cent refunding bonds under which it would acquire and operate the property of the Alton, taking over that road's liability under its lease contracts with the Joliet & Chicago and the Louisiana & Missouri River and its equipment trust obligations. The G. M. & O. does not propose to assume the lease of the Kansas City, St. Louis & Chicago, but it would acquire the Alton's controlling ownership of that company's stock and in addition would offer to purchase the remaining common and 6 per cent guaranteed preferred stock of the K. C. St. L. & C. outstanding by exchange, par for par, of G. M. & O. general mortgage income bonds.

To carry out the transaction, the G. M. & O. has asked authority to issue 378,787½ additional shares of no-par common stock and $24,539,200 of series B 4 per cent general mortgage income bonds due in 2044. These securities would be applied to the acquisition of the Alton's $45,350,000 issue of 3 per cent refunding mortgage bonds, with which the physical property would go under a proposed plan of reorganization. For each $1,000 in Alton bonds the G. M. & O. would exchange $500 of its general mortgage income bonds and 7¼ shares of its common stock. This exchange would require 328,787½ shares of stock and $22,675,000 of series B income bonds.

GRAND TRUNK WESTERN.—*Annual Meeting.*—In the annual report, submitted by C. A. Skog, general manager, gross operating revenues for 1944 are reported at $35,522,616, as compared with $35,428,970 for the preceding year. Operating expenses amounted to $27,450,541, an increase of $2,529,762 over 1943, due chiefly to increased charges for maintenance of equipment, maintenance of way and structures, deferred and actual, and increased payroll expense under the national wage awards. Net income from railroad operations was $8,072,075, a decrease of $2,436,116 compared with 1943. Surplus for the year, after provision for taxes, fixed charges and other expenses, was $1,079,699, a decrease of $1,123,811.

Since the beginning of the war, industrial representatives of the Grand Trunk Western assisted 125 new industries in locating and acquiring property along the railroad. The report states that many of these war industries are expected to convert to civilian production after the war, which, combined with other post-war projects now active, forecasts heavy industrial construction and operations in territory served by the G. T. W.

MISSOURI PACIFIC.—*Management Upheld.*—A stockholders' committee headed by F. Douglas Wilson, Plainsfield, Ill., and Andrew W. Comstock, Evanston, Ill., elected only three of its candidates to the board of directors in a proxy fight for control of the company at the annual meeting. The management group succeeded in unseating a director gained last year by the opposition and in electing twelve of the fifteen board members.

T. C. Tupper, president of the Midwest Fire & Insurance Co. and the Securities Investment Company of St. Louis, Mo., is the newly-elected director representing the controlling group. The proxy committee nominees selected were John V. Farwell, Chicago manufacturer and banker, who is a new board member, Donald D. Wilson and W. Semour Smith.

MIDDLETOWN & UNIONVILLE.—*Reorganization.*—In a proposed report, Examiner Homer H. Kirby has recommended that the Interstate Commerce Commission approve a plan for this road's reorganization by which its capitalization would be reduced from $500,500 to $149,500 and fixed charges of $7,400 per annum would be eliminated. The new capitalization would consist of $20,000 of 4½ per cent contingent

News Department continued on next left-hand page

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Denver Detroit Houston St. Paul New Orleans Pittsburgh
Roanoke Sanford, N. C. St. Louis Los Angeles San Francisco Seattle Montreal

interest first mortgage bonds and $129,500 of common stock of $50 par value. The equities of the holders of the debtor company's adjustment mortgage income bonds and common stock would be found to have no value. Holders of old first mortgage 4 per cent bonds would receive new common stock at the rate of 14 shares per $1,000 bonds, or 70 per cent of the principal amount of their claims, but no other provision would be made for them. Three bondholders, including the president of the company, who owns $152,000 of the $185,000 of old first mortgage bonds outstanding, would supply new money needed to provide working capital for the reorganization, and would receive the new first mortgage contingent interest bonds therefor.

NEW YORK, CHICAGO & ST. LOUIS.—*Refinancing.*—Division 4 of the Interstate Commerce Commission has authorized this company to issue $58,000,000 of series E 3¼ per cent refunding mortgage bonds, sold at 99.779 to Halsey, Stuart & Company and others. The proceeds and other funds are to be used to redeem $59,875,000 of series C 4½ per cent refunding mortgage bonds. The net saving of the refinancing program is estimated at $24,716,205. (Previous item in *Railway Age* of April 14, page 689.) In addition to the issue and sale thus approved, the division also has authorized the nominal issue of $10,000,000 of the series E bonds to be substituted for an equal principal amount of the series C issue held in the road's treasury.

NORTHERN PACIFIC.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume liability for $3,500,000 of equipment trust certificates in connection with the purchase of the following equipment at a total cost of about $4,400,000: 12 1,000-hp. diesel-electric switching locomotives, of which 8 are to be built by the Baldwin Locomotive Works and 4 by the American Locomotive Company; and 1,000 50-ton box cars, of which 500 are to be built by the Pullman-Standard Car Manufacturing Company and 500 by the American Car & Foundry Company.

WHEELING & LAKE ERIE.—*Trackage Rights.*—Division 4 of Interstate Commerce Commission has reopened for further hearing and consideration Finance Docket 14531 proceedings wherein it had previously denied this road authority to operate under trackage rights over a 1.97-mile line of the Wheeling Steel Corporation. The time and place of rehearing will be set later. In its application for further consideration, the road indicated that a new agreement covering the proposed operation had been reached, the terms thereof being such that the division's principal ground for objection to the transaction apparently would be removed.

Average Prices Stocks and Bonds

	May 15	Last week	Last year
Average price of 20 representative railway stocks	53.87	54.38	39.48
Average price of 20 representative railway bonds	99.11	99.42	87.76

Dividends Declared

Bangor & Aroostook.—5% preferred, $2.50, accum., payable July 1 to holders of record June 6.

Great Northern.—Preferred, $1.50, payable June 21 to holders of record May 21.

New York Central.—Irreg., 50¢, payable July 16 to holders of record May 26.

Pittsburgh & Lake Erie.—(reduced), $2.00, payable June 15 to holders of record May 21.

Pittsburgh, Youngstown & Ashtabula.—7% preferred, $1.75, quarterly, payable June 1 to holders of record May 21.

Virginian.—62½¢, quarterly, payable June 21 to holders of record June 8.

Railway Officers

EXECUTIVE

Donald V. Fraser, executive office manager of the Missouri-Kansas-Texas at St. Louis, Mo., has been promoted to executive assistant, with the same headquarters.

Frank R. Newman, vice-president—traffic—of the Great Northern, with headquarters at St. Paul, Minn., has resigned. Until a successor is appointed, the duties of Mr. Newman will be divided between **P. H. Burnham,** freight traffic manager, and **A. J. Dickinson,** passenger traffic manager. Mr. Newman was born at Evanston, Ill., on November 6, 1883, and attended Northwestern University. He first entered railway service with the Wabash in 1905, leaving that company in the following year to become a traveling freight agent of the Michigan Central. After nine years in this



Frank R. Newman

capacity, Mr. Newman was advanced to assistant commercial agent and in 1917 he became chief clerk to the traffic manager. In the following year he was promoted to assistant general freight agent, with headquarters at Buffalo, N. Y., and after two years in this capacity he was transferred to Detroit, Mich. In 1922, Mr. Newman left the Michigan Central to become general traffic manager of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis, Minn. In 1925 he was elected vice-president in charge of traffic of that road, which position he held until January 1, 1938, when he was elected to the position he held at the time of his retirement.

FINANCIAL, LEGAL AND ACCOUNTING

Edward D. Mohr, commerce attorney of the Louisville & Nashville at Louisville, Ky., has been promoted to senior commerce attorney, with the same headquarters. **M. T. Hastings,** secretary to the general auditor, has been advanced to commerce attorney, with headquarters as before at Louisville, succeeding Mr. Mohr.

Gerald Hartzog has been appointed assistant general counsel of the Great Northern, with headquarters at St. Paul, Minn.

D. M. Stalker, auditor of the Duluth, Missabe & Iron Range at Duluth, Minn., has been promoted to comptroller, with the same headquarters.

F. E. Jolly has been appointed secretary and treasurer of the Burlington-Rock Island, with headquarters at Houston, Tex., succeeding **C. W. Ruffner,** who has resigned to accept employment elsewhere.

OPERATING

Kenneth M. Robertson, whose promotion to superintendent of terminals of the Chesapeake & Ohio, with headquarters at Chicago, was reported in the *Railway Age* of March 10, was born at Manteo, Va., on March 8, 1912, and entered railway service with the Chesapeake & Ohio on October 6, 1926, as a messenger. He subsequently held various clerical positions at Richmond, Va., including that of stenographer-clerk, junior



Kenneth M. Robertson

clerk and pass clerk until February 9, 1942, when he was promoted to secretary to the vice-president and general manager at Richmond. On April 1, 1943, Mr. Robertson was advanced to secretary to the executive vice-president, with the same headquarters, the position he held at the time of his new appointment.

H. B. Potts has been appointed general superintendent of the De Queen & Eastern and of the Texas, Oklahoma & Eastern, with headquarters at Kansas City, Mo.

V. E. Cisna has been appointed acting superintendent of the Peoria & Pekin Union, with headquarters at Peoria, Ill., succeeding to the duties of **J. L. Umshler,** who has been granted a leave of absence.

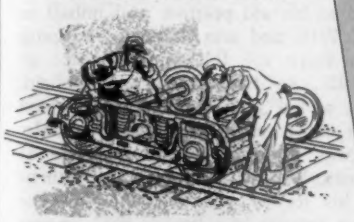
W. W. Houston, superintendent of the Hocking division of the Chesapeake & Ohio at Columbus, Ohio, has been promoted to assistant to the general superintendent of the Western General division with the same

News Department continued on next left-hand page

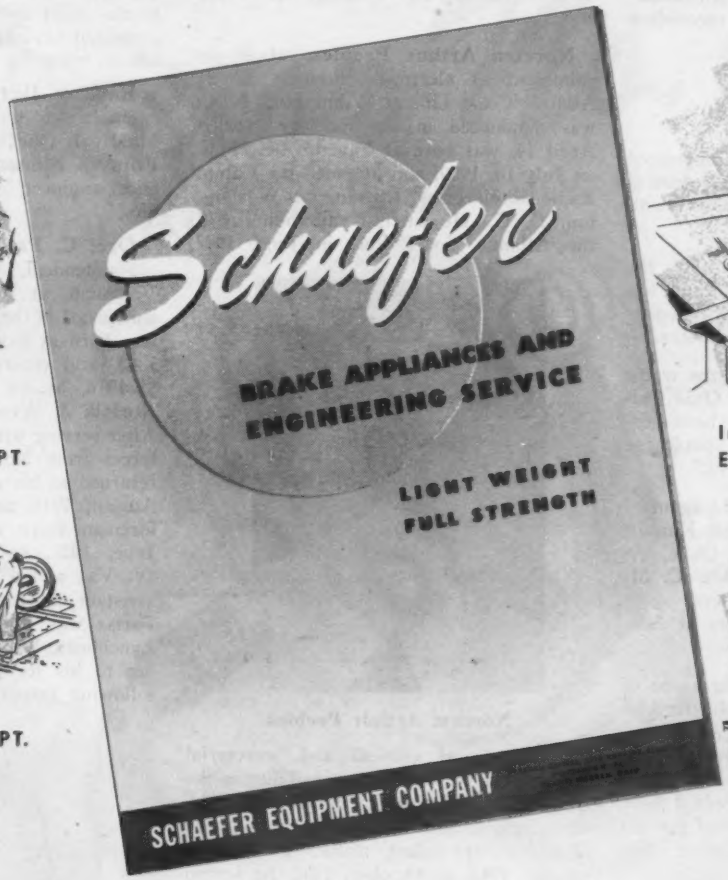
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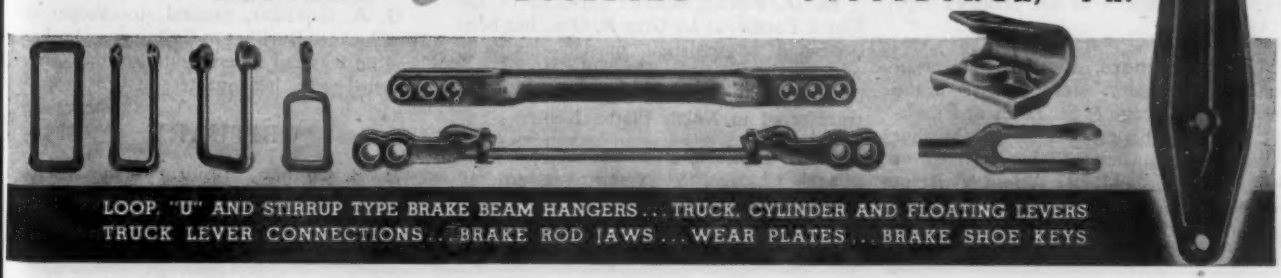
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headquarters. **B. R. Gould,** assistant superintendent of the Hocking division, has been advanced to superintendent, with headquarters as before at Columbus, succeeding Mr. Houston.

TRAFFIC

B. W. Mayfield has been appointed traffic manager, treasurer and general auditor of the El Dorado & Wesson, with headquarters at El Dorado, Ark.

T. H. Kelch, general agent of the Chicago & Eastern Illinois at Chicago, has been promoted to assistant general passenger agent, with the same headquarters.

D. W. Owen, chief clerk of the traffic department of the Baltimore & Ohio Chicago Terminal at Chicago, has been promoted to general freight and passenger agent, with the same headquarters.

S. O. Belcher, general freight agent of the Midland Valley and of the Kansas, Oklahoma & Gulf at Muskogee, Okla., has been transferred to Detroit, Mich. **C. M. Wyatt** has been appointed general agent of both roads, with headquarters at Ada, Okla.

H. A. Gigger, general traffic agent of the New York, New Haven & Hartford, at Cleveland, Ohio, has been transferred to New York, and **John E. Leamy,** general traffic agent at Atlanta, Ga., has been transferred to Cleveland succeeding him. **George H. Moss** has been named general traffic agent at Atlanta replacing Mr. Leamy.

Henry M. Erving, general passenger agent in charge of train service of the New York, New Haven & Hartford at Boston, Mass., has been appointed the road's passenger traffic manager with office at Boston, succeeding **Albert H. Seaver,** who has been appointed special assistant to the vice-president. **Robert R. Walker** has been named general passenger agent in charge of train service succeeding Mr. Erving.

Edwin N. Aiken, assistant passenger traffic manager of the Southern at Atlanta, Ga., has been promoted to the newly created position of passenger traffic manager with the same headquarters.

ENGINEERING & SIGNALING

C. H. Vogt, assistant division engineer of the Jersey Central Lines, has been promoted to division engineer at Jersey City, N. J., succeeding T. E. MacMannis, whose appointment as engineer, maintenance of way, was announced in the *Railway Age* of April 21.

H. F. Whitmore, division engineer of the Lake Erie & Western district of the New York, Chicago & St. Louis at Frankfort, Ind., has been promoted to assistant to the chief engineer, with headquarters at Cleveland, Ohio. **M. B. Allen,** assistant division engineer at Conneaut, Ohio, has been advanced to division engineer of the Clover Leaf district, with headquarters at Frankfort, succeeding **R. E. Oberdorf,** who has been transferred to the Lake Erie & Western district, replacing Mr. Whitmore.

Norcum Arthur Peebles, whose appointment as electronic engineer of the Atlantic Coast Line at Wilmington, N. C., was announced in the *Railway Age* of April 14, was born at Fayetteville, N. C., on July 16, 1909, and attended the Capitol Radio Engineering Institute at Washington, D. C. He entered railroading with the Atlantic Coast Line in June, 1927,



Norcum Arthur Peebles

holding several clerical and secretarial positions of increasing responsibility in the freight traffic department until June, 1938, when he was named statistician in the office of the vice-president, traffic. From September, 1940, to October, 1942, he served on the clerical staff of the executive vice-president, joining the staff of the president in the latter year and remaining in his position until his recent appointment as electronic engineer. Mr. Peebles was also employed by North Carolina State College as an instructor of radio and electronics in adult evening classes from October, 1941, to March, 1944, and in 1943 was named engineer of radio station WMFD at Wilmington.

MECHANICAL

G. M. Duck, traveling master mechanic of the Gulf, Mobile & Ohio, has been promoted to master mechanic of the Northern division, with headquarters at Jackson, Tenn., succeeding **J. A. Dempster,** who has retired.

R. Amundsen has been appointed division master mechanic of the Canadian National's St. Lawrence division, with headquarters at Turcot, Que., succeeding **N. M. Kerr,** who has retired.

E. D. Burke, district foreman of the Union Pacific, at La Grande, Ore., has been promoted to assistant master mechanic, with headquarters at Cheyenne, Wyo., succeeding **C. T. Armstrong,** who has been transferred to North Platte, Neb.

T. F. Powers, chief mechanical officer of the Chicago & North Western at Chicago, has been promoted to assistant to the vice-president, with the same headquarters. **J. E. Goodwin,** assistant chief mechanical officer, has been advanced to chief mechanical officer, succeeding Mr. Powers, and **G. W. Bohannon,** assistant to the chief mechanical officer, has been promoted to assistant chief mechanical officer, replacing Mr. Goodwin.

Ramsay Gray Gage, chief electrical engineer of the Canadian National at Montreal, Que., has retired, and **Harold Forsyth Finnemore,** assistant chief electrical engineer, has been named to succeed him.

Orel C. Fariss, whose appointment as superintendent, car department, of the Virginian at Princeton, W. Va., was announced in the *Railway Age* of April 21, was born at Goodland, Ind., on April 18, 1896, and entered railroading on March 8, 1916, as air brake repairman of the Norfolk & Western at Kimball, W. Va. After serving with the United States armed forces from November, 1917, to 1919, he returned to his old position at Kimball in August, 1919, and was promoted to gang foreman there the following March. In June, 1921, he transferred to Bluefield, W. Va., and a year later he was named assistant car foreman at Crewe, Va. Mr. Fariss was promoted to car foreman at Lynchburg, Va., in February, 1924, returning to his former position at Crewe the following July, and on June 1, 1927, he was



Orel C. Fariss

named car foreman at Clare, Ohio. He served as car foreman at Columbus, Ohio, from November 1, 1936, until his recent appointment as superintendent, car department, of the Virginian at Princeton.

PURCHASES AND STORES

Harry J. Hadden has been appointed purchasing agent of the Chicago & Illinois Midland, with headquarters at Springfield, Ill.

G. A. Goerner, general storekeeper of the Chicago, Burlington & Quincy, who has been on leave of absence due to illness, has returned to his headquarters at Chicago.

OBITUARY

H. B. Cobban, president of the Northeast Oklahoma, with headquarters at Miami, Okla., died at his home in that city on May 3.

Table of Freight Operating Statistics begins on next left-hand page

Factor No. 1

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Freight Operating Statistics of Large Steam Railways—Selected

Region, road, and year		Miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross excl. locos. & tenders	Ton-miles (thousands): Net-rev. and non-rev.	Road locos. on line: Serviceable: Unstored	Road locos. on line: Serviceable: Stored	Road locos. on line: B. O.	Road locos. on line: Per cent B. O.
New England Region:													
Boston & Albany	1945	362	143,433	160,063	23,682	3,080	68.6	196,328	87,705	80	..	12	13.0
	1944	362	159,652	192,029	38,840	3,880	63.5	259,436	112,480	79	..	14	15.1
Boston & Maine	1945	1,777	346,215	377,031	24,230	12,869	70.6	822,975	375,377	150	2	19	11.1
	1944	1,807	391,854	454,958	48,030	13,621	66.4	904,255	404,382	158	..	20	11.2
N. Y., New H. & Hartf.†	1945	1,815	446,497	569,343	49,420	17,014	72.3	1,013,022	459,819	249	5	40	19.9
	1944	1,815	525,150	641,047	59,072	19,035	67.2	1,205,628	539,826	242	1	32	17.5
Great Lakes Region:													
Delaware & Hudson	1945	846	301,939	395,274	41,829	13,385	71.4	923,846	498,502	135	46	38	17.4
	1944	848	350,755	438,967	42,232	14,678	67.0	1,063,053	567,935	139	26	41	19.9
Del., Lack. & Western	1945	971	327,854	395,075	74,748	13,608	72.6	879,655	425,792	155	5	40	20.0
	1944	971	368,472	431,551	70,516	14,950	68.3	1,014,509	489,005	159	15	27	13.4
Erie	1945	2,243	869,576	947,118	71,340	41,811	69.5	2,679,361	1,216,387	348	2	60	14.6
	1944	2,244	1,068,826	1,156,076	85,529	47,703	65.6	3,180,601	1,422,589	311	..	88	22.1
Grand Trunk Western	1945	1,026	256,887	266,003	3,002	8,859	73.1	548,404	258,590	73	2	8	9.6
	1944	1,026	283,007	297,180	3,790	8,824	66.7	576,946	257,938	65	..	14	17.7
Lehigh Valley	1945	1,247	420,203	457,018	64,161	18,236	64.6	1,265,581	609,516	153	..	16	9.5
	1944	1,247	538,079	595,390	83,076	21,499	59.9	1,565,007	733,193	154	..	13	7.8
New York Central	1945	10,331	3,197,434	3,450,710	236,753	117,994	66.5	8,075,008	3,891,060	1,114	10	263	19.0
	1944	10,325	3,703,176	3,995,872	270,580	137,051	62.4	9,766,554	4,593,113	1,166	7	231	16.5
New York, Chi. & St. L.	1945	1,656	712,795	728,110	11,316	28,588	70.3	1,863,386	888,578	176	2	23	11.4
	1944	1,657	865,391	881,258	11,178	32,870	64.7	2,222,298	1,001,944	172	..	16	8.5
Pere Marquette	1945	1,915	389,759	400,685	11,256	13,927	73.1	898,250	445,905	143	..	21	12.8
	1944	1,945	448,193	464,390	12,684	14,380	64.6	1,005,575	483,112	143	..	20	12.3
Pitts. & Lake Erie*	1945	229	80,699	84,460	268	3,272	66.5	269,485	157,701	24	..	16	40.0
	1944	229	94,093	99,382	277	3,971	63.6	339,220	197,580	29	..	16	35.6
Wabash	1945	2,381	668,461	688,641	17,472	25,203	74.9	1,583,523	761,750	178	..	36	16.8
	1944	2,381	729,892	758,907	18,920	27,011	71.6	1,750,005	832,164	175	7	41	18.4
Central Eastern Region:													
Baltimore & Ohio	1945	6,101	2,206,215	2,701,587	279,344	76,617	68.4	5,292,169	2,656,947	943	3	215	18.5
	1944	6,109	2,332,558	2,840,472	287,258	76,396	62.7	5,539,686	2,703,205	898	2	221	19.7
Central of New Jersey†	1945	654	207,682	241,753	52,413	7,951	64.0	570,798	285,970	118	2	27	18.4
	1944	655	245,140	287,833	64,703	8,856	60.0	657,009	327,356	138	2	16	10.3
Chicago & Eastern Ill.	1945	912	205,979	208,109	4,275	5,777	65.0	396,470	188,243	66	5	8	10.1
	1944	912	304,079	310,729	9,481	8,818	60.0	632,007	288,777	80	..	6	7.0
Elgin, Joliet & Eastern	1945	392	127,987	132,762	4,643	3,739	66.7	289,068	157,117	63	..	14	18.2
	1944	392	134,376	138,570	4,052	3,715	65.6	292,818	159,010	63	..	13	17.1
Long Island	1945	372	29,214	30,821	15,218	350	58.9	24,392	10,935	47	..	2	4.1
	1944	372	36,308	38,055	15,640	408	58.7	29,982	13,274	46	..	8	14.8
Pennsylvania System	1945	9,868	4,108,110	4,809,955	644,933	162,965	67.7	10,970,089	5,415,661	2,068	..	177	7.9
	1944	9,882	4,829,232	5,643,676	717,927	177,547	61.2	12,953,456	6,181,710	2,017	..	194	8.8
Reading	1945	1,365	565,296	627,445	71,806	19,282	68.2	1,380,434	767,182	275	5	54	16.2
	1944	1,415	586,552	667,257	88,766	19,747	64.3	1,516,403	820,971	282	1	40	12.4
Pocahontas Region:													
Chesapeake & Ohio	1945	3,036	1,134,831	1,241,376	56,755	50,871	57.9	4,289,337	2,443,013	458	2	73	13.7
	1944	3,032	1,134,674	1,244,095	61,734	48,998	56.8	4,251,901	2,405,292	445	1	74	14.2
Norfolk & Western	1945	2,132	844,616	927,879	81,209	39,043	60.6	3,291,417	1,783,087	295	5	17	5.4
	1944	2,132	828,643	906,949	72,933	36,068	58.7	3,183,341	1,745,784	300	10	22	6.6
Southern Region:													
Atlantic Coast Line	1945	4,926	1,106,939	1,125,850	17,048	31,008	60.6	2,106,492	903,238	390	4	28	6.6
	1944	4,953	1,062,740	1,090,696	15,128	28,862	61.7	1,970,593	858,078	377	5	19	4.7
Central of Georgia†	1945	1,783	360,737	374,255	6,609	9,012	70.4	590,591	278,983	92	..	15	14.0
	1944	1,783	350,778	360,490	5,675	8,419	68.0	566,568	265,489	95	..	10	9.5
Gulf, Mobile & Ohio	1945	1,941	254,530	329,022	1,493	9,612	80.4	589,073	297,428	106	5	10	8.3
	1944	1,962	304,615	384,128	1,140	10,671	74.7	685,726	346,156	111	..	10	8.3
Illinois Central (incl. Yazoo & Miss. Vy.)	1945	6,347	1,449,220	1,466,852	28,287	54,757	67.3	3,700,792	1,788,193	642	..	56	8.0
	1944	6,347	1,771,719	1,786,732	33,852	66,496	62.0	4,738,265	2,215,412	656	..	47	6.7
Louisville & Nashville	1945	4,746	1,553,166	1,703,293	45,382	40,803	66.2	2,857,327	1,483,750	419	2	59	12.3
	1944	4,736	1,594,702	1,743,697	46,880	39,885	64.4	2,864,139	1,480,190	420	2	59	12.3
Seaboard Air Line*	1945	4,163	894,461	964,358	15,090	26,116	67.6	1,718,350	744,256	295	..	47	13.7
	1944	4,165	991,419	1,055,243	16,869	27,176	66.9	1,809,035	809,514	311	..	35	10.1
Southern	1945	6,471	2,126,262	2,161,583	36,772	48,968	70.9	3,086,372	1,442,564	594	..	89	13.0
	1944	6,479	2,160,979	2,207,709	34,401	48,698	70.1	3,129,381	1,474,157	612	..	83	11.9
Northwestern Region:													
Chi. & North Western	1945	8,069	959,918	1,000,582	22,303	30,837	73.4	1,996,451	986,784	363	10	118	24.0
	1944	8,098	1,064,071	1,120,955	23,913	32,996	68.8	2,208,028	1,039,374	371	25	109	21.6
Chicago Great Western	1945	1,445	265,096	270,195	8,202	8,394	74.6	531,339	246,798	71	..	9	11.3
	1944	1,445	308,419	318,205	12,362	9,659	71.0	638,225	294,135	68	..	11	13.9
Chi., Milw., St. P. & Pac.†	1945	10,714	1,419,189	1,513,761	67,780	50,203	72.6	3,250,441	1,606,281	518	41	71	11.3
	1944	10,732	1,524,034	1,626,045	72,398	49,254	68.7	3,299,593	1,600,196	527	31	87	13.5
Chi., St. P., Minneap. & Om.	1945	1,606	197,326	212,436	12,160	5,090	72.9	339,176	162,843	91	14	26	19.8
	1944	1,606	229,908	246,405	14,732	5,665	64.2	407,209	188,139	89	30	9	7.0
Duluth, Missabe & I. R.	1945	546	29,066	29,477	668	480	58.9	32,466	15,644	26	17	17	28.3
	1944	544	30,446	30,559	760	536	59.3	36,329	17,713	23	11	20	37.0
Great Northern	1945	8,276	1,064,041	1,064,275	47,177	38,665	76.0	2,474,794	1,219,497	371	36	68	14.3
	1944	8,278	1,205,490	1,204,077	49,812	42,313	69.8	2,912,302	1,426,176	399	15	65	13.6
Min., St. P. & S. St. M.†	1945	4,259	376,792	385,330	7,317	9,681	72.3	619,827	300,730	123	4	7	5.2
	1944	4,259	511,705	526,022	9,825	13,148	63.9	944,677	458,011	134	2	7	4.9
Northern Pacific	1945	6,570	877,729	939,671	74,212	36,948	75.8	2,422,530	1,237,248	367	30	57	12.6
	1944	6,571	971,834	1,043,071	84,200	38,486	72.3	2,645,551	1,371,950	369	20	55	12.4
Great Western Region:													
Alton†	1945	915	256,643	268,534	536	7,273	73.1	461,699	209,949	73	..	6	7.6
	1944	915	250,385	272,101	1,595	6,776	68.7	449,899	224,579	70	5	3	3.8
Atch., Top. & S. Fe incl. G. C. & S. F. & P. & S.F.)	1945	13,115	3,176,900	3,334,494	160,362	114,271	66.2	7,514,778	3,153,131	876	6	126	12.5
	1944	13,123	3,047,986	3,259,058	195,133	106,328	68.0	7,031,769	3,022,904	826	6	121	12.7
Chi., Burl. & Quincy	1945	8,790	1,280,607	1,338,828	47,693	50,129	72.0	3,321,806	1,638,360	485	..	73	13.1
	1944	8,794	1,438,913	1,517,070	46,597	50,870	64.5	3,595,920	1,699,106	490	..	70	12.5
Chi., Rock I. & Pac.†	1945	7,716	1,288,862	1,337,563	12,854	42,065	74.6	2,580,438	1,206,578	402	..	60	13.0
	1944	7,718	1,348,047	1,407,093	17,814	40,477	68.9	2,612,498	1,177,156	383	..	76	16.6
Denver & R. G. Wn.†	1945	2,386	420,737	470,372	72,585	14,247	78.9	896,847	460,353	159	15	37	17.5
	1944	2,399	409,236	466,171	71,929	13,381	77.7	861,260	446,118	172	3	47	21.2
Southern Pacific—Pac. Lines	1945	8,179	2,089,960	2,386,146	387,421	90,142	70.8	5,754,177	2,497,981	790	..	150	16.0
	1944	8,194	2,161,457	2,487,682	374,885	90,640	70.5	5,836,674	2,537,372	832	1	110	11.7
Union Pacific	1945	9,781	2,789,832	2,978,090	263,701	102,411	71.5	6,618,222	3,099,280	803	34	73	8.0
	1944	9,782	3,048,207	3,273,147	296,726	106,329	71.6	6,904,353	3,260,243	838	..	68	7.5
Southwestern Region:													
Mo.-Kans.-Texas Lines	1945	3,241	762,387	791,545	15,394	21,225	65.4	1,424,841	664,319	160	..	14	8.0
	1944	3,281	692,402	713,054	11,822	18,483	64.0	1,249,777	571,899	159	..	16	9.1
Missouri Pacific†	1945	7,056	1,505,162	1,574,558	40,752	54,584	69.3	3,600,071	1,679,014	451	..	85	15.9
	1944	7,071	1,753,973	1,845,160	44,230	61,794	65.1	4,244,206	1,960,414	479	1	63	11.6
Texas & Pacific	1945	1,882	429,664	429,664	7,239	15,087	68.8	959,721	406,236	131	12	17	10.6
	1944	1,882	445,483	445,483	6,485	15,420	70.4	993,268	412,539	114	17	17	11.5
St. Louis-San Francisco†	1945	4,615	992,413	1,054,252	19,037	24,818	72.2	1,584,765	757,431	319	..	30	8.6
	1944	4,628	1,107,107	1,181,614	28,117	27,162	66.4	1,823,348	841,251	324	..	23	6.6
St. Louis-San Fran. & Texas	1945	159	31,481	32,264	.....	571	73.5	35,211	15,058	9	..	1	10.0
	1944	159	33,791	34,473	.....	595	70.6	36,414	15,033	8	..	2	20.0
St. Louis Southw. Lines†	1945	1,600	453,036	457,396	6,003	16,751	76.0	1,004,090	467,575	112	2	22	16.2
	1944	1,600	506,426	516,690	7,294	17,071	69.1	1,063,012	459,885	117	4	26	17.7
Texas & New Orleans	1945	4,331	1,045,789	1,047,777	31,453	27,590	66.8	1,831,338	807,554	257	..	25	8.9
	1944	4,339	1,148,815	1,155,822	32,734	31,519	66.2	2,088,842	916,764	261	1	19	6.8

* Report of receivers.
† Report of trustee or trustees.

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

Items for the Month of February 1945 Compared with February 1944

Region, road, and year		Freight cars on line: Home	Foreign	Total	Per Cent B. O.	G.t.m. per train-hr. excl.locos. and tenders	G.t.m. per train-mi. excl.locos. and tenders	Net ton-mi. per train-mile	Net ton-mi. per l'd. car-mile	Net ton-mi. per car-day	Car miles per car-day	Net daily ton-mi. per road-mi.	Coal lb. per 1000 g.t.m. inc. loco.	Mi. per loco. per day
New England Region:														
Boston & Albany	1945	213	7,467	7,680	0.3	17,783	1,405	628	28.5	440	22.5	8,653	221	81.2
	1944	302	5,643	5,945	0.5	23,572	1,636	709	29.0	634	34.4	10,714	214	95.2
Boston & Maine	1945	1,948	17,500	19,448	2.1	32,588	2,389	1,090	29.2	807	39.2	7,544	119	90.6
	1944	1,854	11,051	12,905	2.3	34,524	2,315	1,035	29.7	1,135	57.6	7,717	112	103.3
N. Y., New H. & Hartf.†	1945	2,300	32,142	34,442	2.6	27,708	2,282	1,036	27.0	539	27.6	9,048	115	86.5
	1944	2,932	24,132	27,064	2.1	33,083	2,330	1,043	28.4	707	37.1	10,256	108	95.7
Great Lakes Region:														
Delaware & Hudson	1945	3,330	8,958	12,288	2.8	45,701	3,077	1,661	37.2	1,521	57.2	21,044	127	75.1
	1944	3,532	8,192	11,724	1.5	48,932	3,047	1,628	38.7	1,782	68.8	23,094	113	82.1
Del., Lack. & Western	1945	5,049	18,180	23,229	3.1	32,364	2,736	1,324	31.3	666	29.3	15,661	151	90.6
	1944	4,783	13,996	18,779	2.8	39,429	2,784	1,342	32.7	870	38.9	17,366	135	93.4
Erie	1945	9,008	37,288	46,296	3.0	41,564	3,116	1,415	29.1	924	45.7	19,368	113	95.9
	1944	10,728	29,972	40,700	2.4	46,010	2,994	1,339	29.8	1,207	61.7	21,860	105	115.2
Grand Trunk Western	1945	1,841	10,018	11,859	3.2	39,716	2,161	1,019	29.2	818	38.3	9,001	94	124.5
	1944	2,278	6,056	8,334	4.1	41,243	2,057	919	29.2	1,114	57.1	8,669	92	139.1
Lehigh Valley	1945	5,644	25,798	31,442	1.8	37,343	3,113	1,499	33.4	659	30.5	17,457	126	116.2
	1944	5,961	24,147	30,108	2.1	44,287	3,010	1,410	34.1	845	41.4	20,275	124	147.0
New York Central	1945	42,916	133,799	176,715	2.6	34,848	2,567	1,237	33.0	785	35.8	13,451	121	106.8
	1944	43,220	112,658	155,878	2.4	38,644	2,670	1,256	33.5	1,027	49.1	15,340	114	114.9
New York, Chi. & St. L.	1945	1,887	18,158	20,045	1.9	42,992	2,636	1,257	31.1	1,611	73.8	19,164	95	137.1
	1944	2,637	13,635	16,272	2.3	42,644	2,587	1,167	30.5	2,089	105.9	20,851	94	173.5
Pere Marquette	1945	1,681	12,297	13,978	1.9	40,757	2,339	1,161	32.0	1,191	50.9	8,316	101	95.3
	1944	2,326	10,123	12,449	1.9	38,354	2,276	1,094	33.6	1,405	64.7	8,565	96	107.5
Pitts. & Lake Erie	1945	1,919	8,599	10,518	3.9	42,674	3,344	1,957	48.2	477	14.9	24,595	112	81.3
	1944	2,778	8,122	10,900	3.6	47,697	3,623	2,110	49.8	566	17.9	29,752	101	85.4
Wabash	1945	5,144	16,903	22,047	2.7	43,000	2,387	1,148	30.2	1,323	58.4	11,426	121	122.7
	1944	5,898	13,045	18,943	1.8	44,608	2,429	1,155	30.8	1,441	65.4	12,052	114	125.4
Central Eastern Region:														
Baltimore & Ohio	1945	31,574	54,988	86,562	3.8	28,262	2,455	1,233	34.7	1,048	44.2	15,553	164	94.6
	1944	32,802	52,657	85,459	2.8	29,515	2,430	1,186	35.4	1,033	46.5	15,258	160	99.8
Central of New Jersey†	1945	3,938	15,335	19,273	4.1	30,542	2,774	1,390	36.0	528	23.0	15,617	128	89.3
	1944	4,324	26,300	30,624	1.3	27,021	2,704	1,347	37.0	380	17.1	17,234	150	104.5
Chicago & Eastern Ill.	1945	1,754	3,714	5,468	4.4	33,608	1,976	938	32.6	1,194	56.4	7,372	136	98.1
	1944	2,046	4,730	6,776	2.7	35,065	2,163	988	32.7	1,406	71.5	10,919	126	132.2
Elgin, Joliet & Eastern	1945	8,143	8,029	16,172	2.1	16,103	2,392	1,300	42.0	337	12.0	14,315	151	97.9
	1944	9,258	7,150	16,408	3.1	16,076	2,305	1,252	42.8	337	12.0	13,988	147	99.9
Long Island	1945	29	5,849	5,878	.3	6,375	856	384	31.2	67	3.7	1,050	341	47.1
	1944	19	6,119	6,138	.3	6,558	852	377	32.5	81	4.2	1,230	319	50.7
Pennsylvania System	1945	122,383	143,736	266,119	3.4	31,082	2,774	1,370	33.2	733	32.6	19,600	144	95.2
	1944	115,105	153,443	268,548	2.5	33,593	2,773	1,323	34.8	818	38.4	21,571	137	107.4
Reading	1945	10,465	26,657	37,122	2.4	32,560	2,444	1,358	39.8	753	27.8	20,073	124	86.6
	1944	11,901	33,547	45,448	1.4	27,717	2,593	1,404	41.6	627	23.4	20,007	140	90.0
Pocahontas Region:														
Chesapeake & Ohio	1945	31,257	15,707	46,964	1.5	51,851	3,842	2,188	48.0	1,876	67.5	28,739	89	95.2
	1944	31,984	15,398	47,382	1.0	51,956	3,819	2,160	49.1	1,703	61.1	27,355	89	94.3
Norfolk & Western	1945	25,407	10,394	35,801	.5	58,004	3,949	2,139	45.7	1,802	65.1	29,869	100	119.2
	1944	29,276	6,820	36,096	1.4	59,541	3,910	2,144	48.4	1,662	58.5	28,236	99	109.8
Southern Region:														
Atlantic Coast Line	1945	7,840	24,151	31,991	1.5	29,975	1,914	821	29.1	1,019	57.7	6,549	114	100.6
	1944	7,505	22,369	29,874	2.4	29,402	1,867	813	29.7	987	53.8	5,974	110	101.8
Central of Georgia†	1945	1,699	7,713	9,412	.9	29,705	1,657	783	31.0	1,058	48.6	5,588	140	135.0
	1944	1,742	6,632	8,374	.8	29,450	1,628	763	31.5	1,060	49.4	5,134	128	124.8
Gulf, Mobile & Ohio	1945	1,522	6,510	8,032	.9	39,808	2,320	1,171	30.9	1,309	52.6	5,473	118	104.2
	1944	1,991	7,660	9,651	1.1	39,633	2,258	1,140	32.4	1,288	53.1	6,084	120	115.4
Illinois Central (incl. Yazoo & Miss. Vy.)	1945	16,443	31,572	48,015	1.1	41,978	2,626	1,269	32.7	1,329	60.5	10,062	129	79.5
	1944	17,759	34,011	51,770	.7	43,487	2,735	1,279	33.3	1,472	71.3	12,036	125	92.8
Louisville & Nashville	1945	25,446	16,264	41,710	4.2	27,769	1,840	955	36.4	1,229	51.1	11,165	141	134.0
	1944	29,308	15,867	45,175	2.0	27,048	1,796	928	37.1	1,131	47.3	10,777	133	134.1
Seaboard Air Line*	1945	5,639	19,981	25,620	2.1	33,223	1,977	856	28.5	1,045	54.3	6,385	123	111.1
	1944	6,114	21,911	28,025	1.4	29,721	1,867	836	29.8	1,011	50.7	6,702	137	118.4
Southern	1945	14,715	33,408	48,123	2.7	23,569	1,473	689	29.5	1,073	51.4	7,961	158	118.8
	1944	15,547	32,260	47,807	1.7	24,200	1,470	693	30.3	1,056	49.2	7,846	151	117.1
Northwestern Region:														
Chi. & North Western	1945	18,677	26,348	45,025	3.3	32,750	2,147	1,061	32.0	735	31.3	4,368	138	81.2
	1944	21,250	35,070	56,320	3.1	32,712	2,154	1,014	31.5	665	30.7	4,426	136	84.3
Chicago Great Western	1945	747	4,079	4,826	2.4	34,391	2,019	938	29.4	1,800	82.0	6,100	141	128.8
	1944	1,172	4,777	5,949	.8	36,587	2,084	961	30.5	1,741	80.5	7,019	132	150.1
Chi., Milw., St. P. & Pac.†	1945	18,408	30,002	48,410	2.6	36,101	2,309	1,141	32.0	1,138	49.0	5,354	129	97.1
	1944	23,703	30,003	53,706	1.5	33,582	2,180	1,057	32.5	1,012	45.4	5,142	133	98.5
Chi., St. P., Minneap. & Om.	1945	732	5,782	6,514	5.9	24,626	1,746	838	32.0	875	37.5	3,621	125	65.4
	1944	933	7,592	8,525	4.0	26,444	1,819	840	33.2	768	36.1	4,040	123	72.5
Duluth, Missabe & I. R.	1945	15,057	603	15,660	3.4	15,594	1,190	574	32.6	36	1.9	1,023	197	23.3
	1944	15,077	509	15,586	2.8	15,486	1,277	623	33.0	39	2.0	1,123	170	26.3
Great Northern	1945	18,418	12,533	30,951	2.3	37,180	2,339	1,152	31.5	1,318	55.0	5,263	118	88.1
	1944	21,121	19,186	40,307	2.2	36,728	2,434	1,192	33.7	1,255	53.3	5,941	113	96.7
Min., St. P. & S. St. M.†	1945	5,093	4,713	9,806	4.1	28,310	1,656	803	31.1	1,058	47.1	2,522	116	105.9
	1944	6,172	9,767	15,939	2.6	32,541	1,884	913	34.8	1,011	45.4	3,708	104	128.8
Northern Pacific	1945	13,876	17,636	31,512	2.6	42,587	2,777	1,418	33.5	1,365	53.8	6,726	139	85.4
	1944	15,939	16,994	32,933	3.9	41,635	2,733	1,417	35.6	1,452	56.4	7,200	137	94.0
Great Western Region:														
Alton†	1945	1,191	7,640	8,831	2.4	39,028	1,817	826	28.9	863	40.9	8,195	130	128.6
	1944	949	5,161	6,110	3.3	37,966	1,816	907	33.1	1,286	56.5	8,464	142	130.6
Atch., Top. & S. Fe incl. G. C. & S. F. & P. & S.F.)	1945	34,195	46,306	80,501	3.1	44,284	2,382	999	27.6	1,385	75.8	8,586	114	128.6
	1944	41,484	40,597	82,081	2.6	41,229	2,322	998	28.4	1,261	65.2	7,943	122	129.5
Chi., Burl. & Quincy	1945	14,977	23,547	38,524	3.2	42,008	2,610	1,287	32.7	1,430	60.7	6,657	112	94.0
	1944	17,070	30,646	47,716	1.9	39,514	2,516	1,189	33.4	1,220	56.6	6,662	114	101.7
Chi., Rock I. & Pac.†	1945	8,594	21,083	29,677	3.9	34,920	2,019	944	28.7	1,373	64.2	5,585	118	108.7
	1944	10,494	21,359	31,853	3.0	34,485	1,947	877	29.1	1,210	60.3	5,259	122	111.4
Denver & R. G. Wn.†	1945	7,655	6,017	13,672	5.1	34,589	2,157	1,107	32.3	1,193	46.8	6,891	179	93.9
	1944	8,256	6,410	14,666	3.2	30,922	2,135	1,106	33.3	989	38.2	6,412	185	88.4
Southern Pacific—Pac. Lines	1945	22,900	51,824	74,724	2.7	39,435	2,776	1,205	27.7	1,169	59.6	10,908	102	111.9
	1944	24,487	58,953	83,440	2.2	37,600	2,722	1,183	28.0	1,058	53.6	10,678	105	111.3
Union Pacific	1945	24,893	38,161	63,054	3.1	46,005	2,404	1,093	29.4	1,713	81.5	10,988	133	130.5
	1944	25,813	38,204	64,017	2.7	42,542	2,309	1,090	30.7	1,724	78.5	11,493	140	141.3
Southwestern Region:														
Mo.-Kans.-Texas Lines	1945	1,329	9,457	10,786	.2	34,303	1,877	875	31.3	2,392	116.9	7,320	91	173.3
	1944	2,098	7,284	9,382	.5	33,350	1,812	829	30.9	2,124	107.2	6,011	92	151.9
Missouri Pacific†	1945	11,785	25,565	37,350	1.5	41,088	2,407	1,122	30.8	1,626	76.3	8,498	116	115.7
	1944	11,261	29,396	40,657	1.5	41,195	2,432	1,123	31.7	1,652	80.0	9,560	109	126.8
Texas & Pacific	1945	1,345	7,749	9,094	1.2	40,682	2,248	951	26.9	1,625	87.7	7,709	96	104.8
	1944	1,861	7,303	9,164	1.4	40,321	2,247	933	26.8	1,643	87.3	7,559	94	111.4
St. Louis-San Francisco†	1945	5,806	12,569	18,375	1.9	31,695	1,605	767	30.5	1,506	68.3	5,862	146	114.4
	1944	7,431	12,336	19,767	2.0	31,966	1,653	763	31.0	1,468	71.3	6,268	141	121.8
St. Louis-San Fran. & Texas	1945	.....	200	200	3.0	20,555	1,119	478	26.4	2,160	111.4	3,382	121	130.4
	1944	.....	250	250	9.6	20,619	1,082	447	25.3	2,129	119.4	3,260	132	120.9
St. Louis Southw. Lines†	1945	898	7,000	7,898	1.1	35,497	2,220	1,034	27.9	2,077	97.9	10,437	89	128.4
	1944	1,111	5,734	6,845	.6	34,457	2,109	913	26.9	2,229	119.7	9,911	88	126.5
Texas & New Orleans	1945	3,582	15,893	19,475	2.5	31,874	1,768	779	29.3	1,472	75.2	6,659	97	143.5
	1944	4,074	17,018	21,092	2.0	31,486	1,842	809	29.1	1,409	73.2	7,286	93	152.2

* Report of receivers.
† Report of trustee or trustees.

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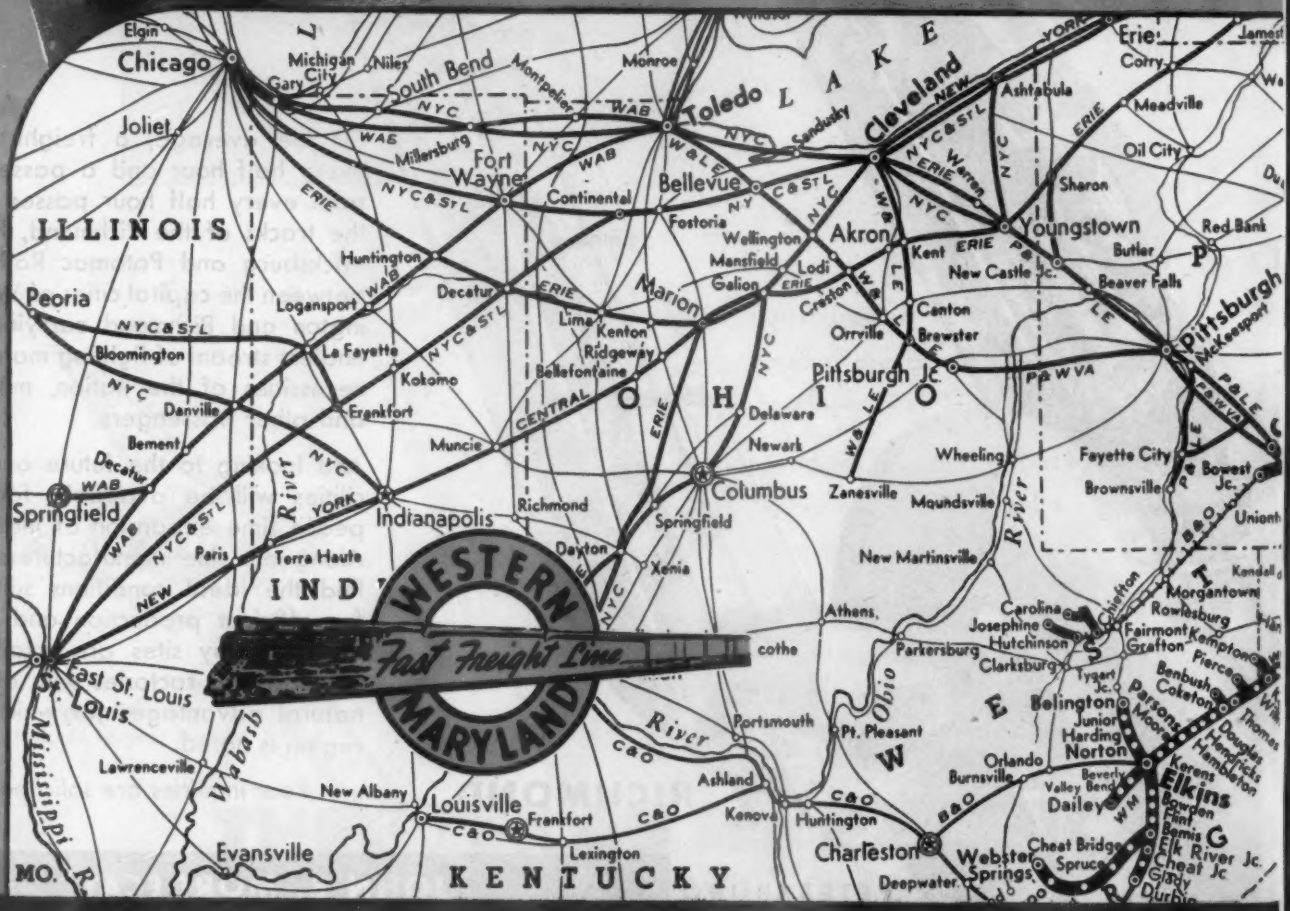
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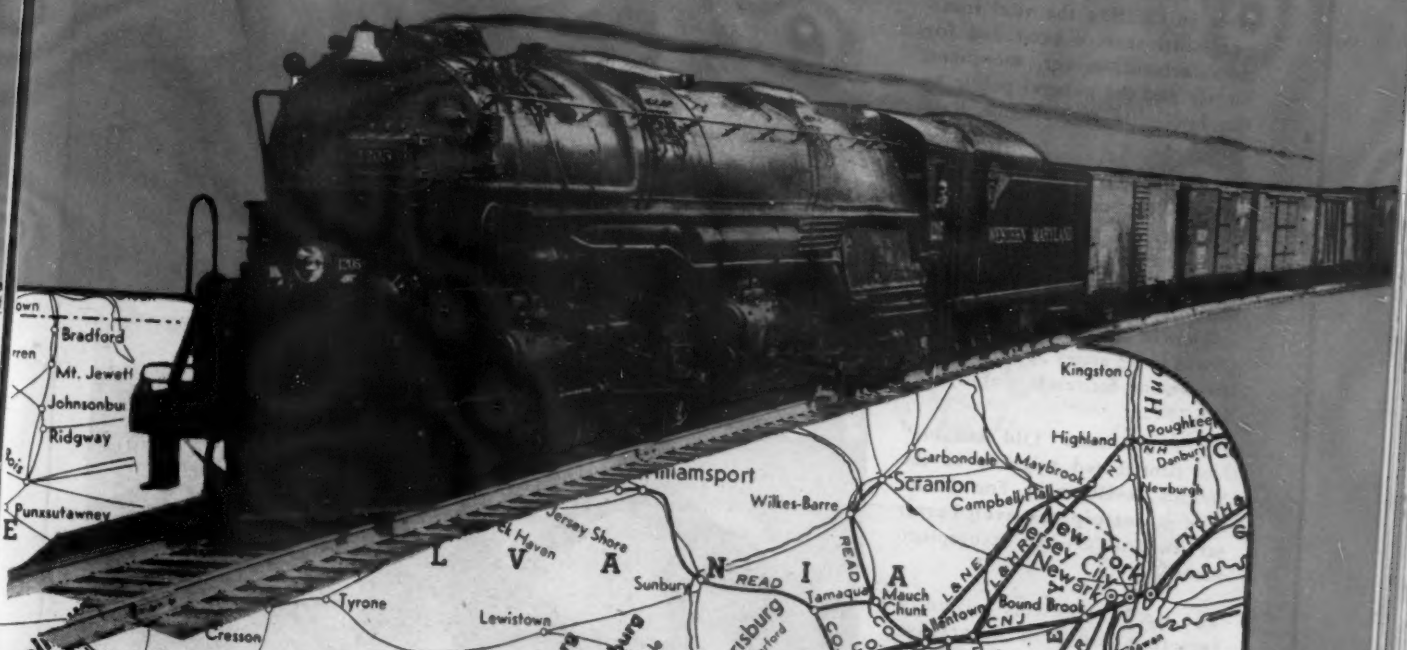
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In 1944 the L & N paid to . . .

Employes in wages and salaries	$85,000,000
Various agencies of Government in taxes	64,000,000
Stockholders in dividends	8,190,000
Bondholders in interest	8,000,000

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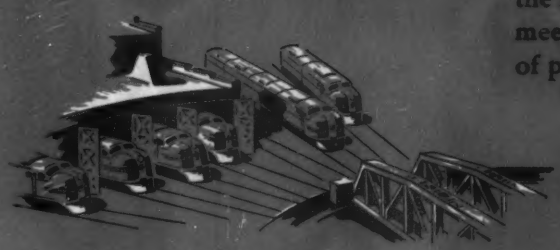


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You've seen a miniature railroad controlled by a central board.

Here you see how traffic is controlled on an important stretch of Santa Fe track in almost the same fashion.

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It eliminates the issuing of train orders, cuts down the detention of needed freight cars, and conserves manpower and engine power.

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★ ★ ★ ★ ★ ★ ★ ★ ★

New Santa Fe Bridge Speeds War Traffic





Santa Fe trains are now rolling across a new double-track steel bridge near Topock, Arizona, speeding up vital war traffic along the route to Tokyo through California's ports of war.

This new Santa Fe bridge removes the "bottle-neck" created by the old single-track bridge it replaces and has ample strength to take care of future requirements as to weights to be imposed on it.

★ ★ ★

The new Topock Bridge is an impressive engineering feat, but it is only one step in Santa Fe's program of plant improvement —started long before Pearl Harbor.

Bigger yards, Centralized Traffic Control, faster grooming of equipment in the shops and new freight locomotives all add up to better, faster service to California's ports of war and an even higher standard of service in the days of peace to come.

SANTA FE SYSTEM LINES

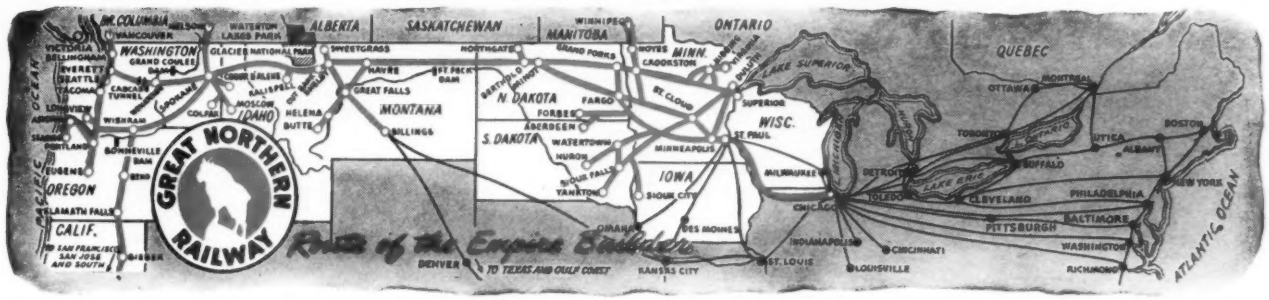
SERVING THE WEST AND SOUTHWEST

Santa Fe

★ ★ ★ ★ ★ ★ ★

GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC



TRUE STORY: GREAT NORTHERN NEVER WILL DRIVE "LAST SPIKE"

Continual Improvements of Line, Equipment and Operations Mark Railway's Progressiveness

On January 6, 1893, Great Northern became a transcontinental railway when a line extending eastward from Puget Sound was joined in the Cascade mountains with track pushed westward from the Great Lakes.

The construction crews posed that wintry day for the traditional "last spike" picture. But, actually the job of building and improving Great Northern never has stopped—in good times and bad!

Great Northern constantly has been improving its roadbed and structures by reducing grades and curves, laying heavier rail, building stronger bridges, boring time-saving tunnels, including the 8-mile Cascade Tunnel, longest in the Western Hemisphere.

Typical of the railway's forward-looking policy is the major track relocation project now under way on Great Northern's main line through the Flathead River canyon, bordering Glacier National Park in the Montana Rockies. Here three tunnels are being blasted through solid rock to eliminate several sharp curves.

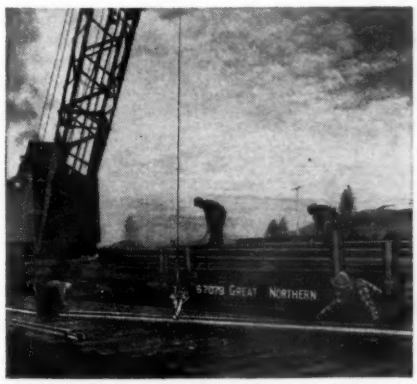
A real "last spike" has not been driven on Great Northern—and never will be!



New, heavier rails and tie plates are spiked to chemically treated ties. Maintenance crews give daily attention to roadbed.



West portal of one of three new tunnels through solid rock on G. N. main line in the Montana Rockies to expedite train movements.

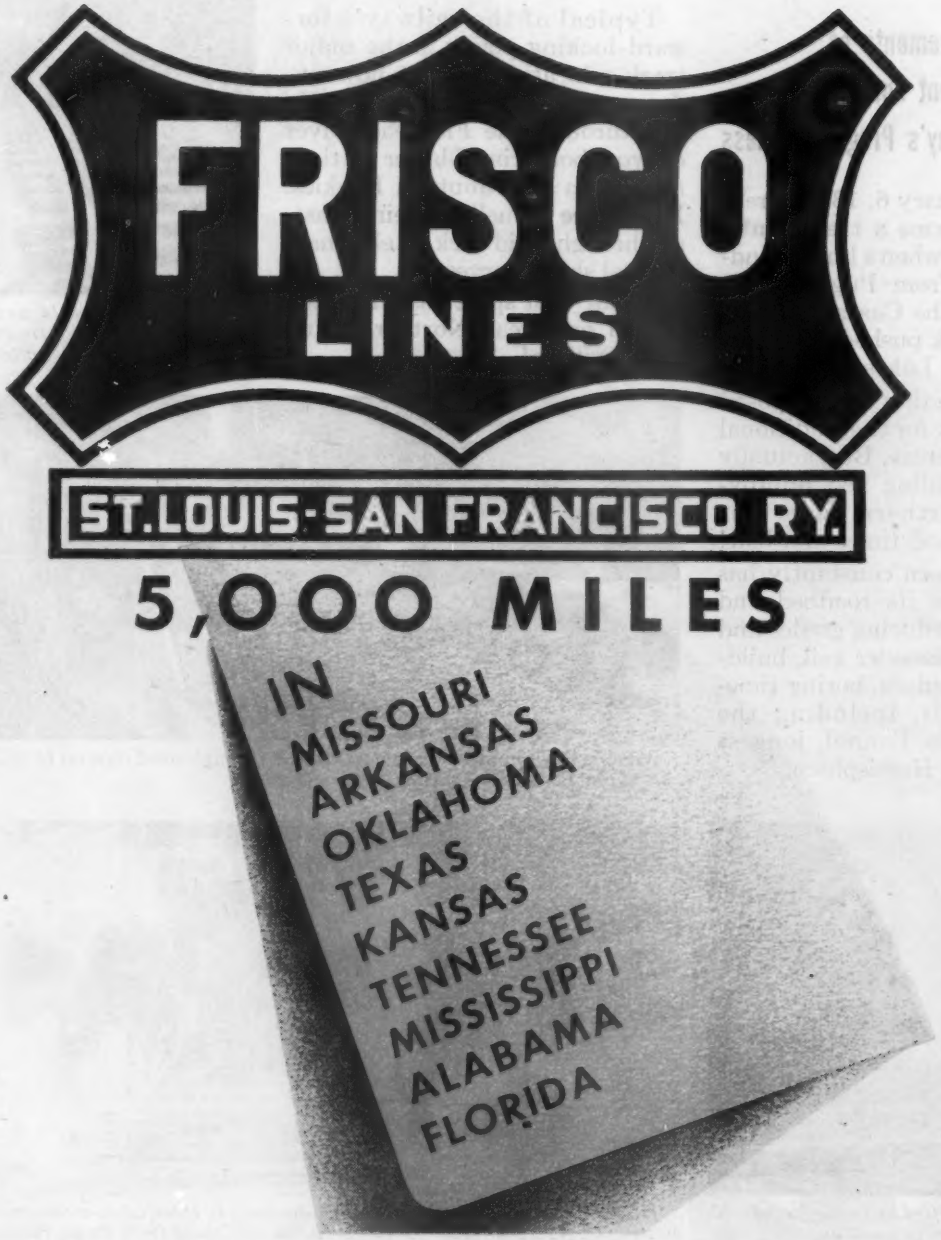


Steel rails are lifted by crane from G. N. flatcars and placed in position.



Historic "last spike" picture, taken January 6, 1893, when crews spiked rails together, joining G. N. tracks from the Great Lakes with those from Puget Sound.

Please turn to page 173→


FRISCO
LINES
ST. LOUIS-SAN FRANCISCO RY.
5,000 MILES
IN
MISSOURI
ARKANSAS
OKLAHOMA
TEXAS
KANSAS
TENNESSEE
MISSISSIPPI
ALABAMA
FLORIDA


A GREAT RAILROAD
IN ITS 96TH YEAR

FIRST LINE OF *Offense*





American tanks on the march—moving up to the front through a liberated French village.

One thing has been clearly demonstrated in the past four years—wars can not be fought without railroads. Indeed, the present conflict has shown the railroads to be our nation's first line of *offense.*

The Seaboard Air Line Railway—a vital link in American transportation, has borne well its part in handling the greatest volume of traffic in history. In the final push for victory, the Seaboard—in common with all American transportation and industry—will exert every effort to keep pace with the needs of our fighting forces.

In the years ahead, the Seaboard will continue to provide the superior transportation service which is no less essential to the pursuits of peace and to the building of a greater nation. Seaboard Air Line Railway, Norfolk 10, Va.

SEABOARD

AIR LINE RAILWAY



THROUGH THE HEART OF THE SOUTH

Buy more WAR BONDS



(Reproduction of a current S. P. billboard design)

Southern Pacific reports to its customers

S. P. handles record traffic successfully

In 1944, Southern Pacific handled the largest volume of traffic in its history, and handled it well.

Net ton miles of freight, slightly exceeding those of 1943, were a new record high for the fifth consecutive year—were nearly three times those of 1939, the last year before defense production affected rail traffic.

However, consolidated net income of the railroad properties for 1944—because of increased expenses, taxes, etc.—was 37.7% less than in 1943, and 51% less than in 1942.

(OVER)



(Reproduction of a typical S. P. territory development advertisement)

S. P. strengthens its plant to handle war load

To handle the traffic more efficiently—to better meet our responsibilities in the war effort, Southern Pacific's steady program of improvements was continued in 1944.

883 track miles of heavier rail were laid.

New sidings were built and 25 more sidings extended. Yard trackage was increased at 17 terminals.

Centralized Traffic Control, which increased capacity of strategic sections of single track by more than 50%, was installed on 76.8 more miles of main line. Installation of this system on 53 more miles of line will be completed this year.

These and many other improvements in the last few years will help materially in providing still better freight service to the public in the postwar period.

Southern Pacific working to build up its territory

Southern Pacific lines were first started in 1863 to handle traffic to and from the Orient, and from the fabulous Nevada mines. The Suez Canal was built, diverting the expected traffic, and production of the Nevada mines began to wane.

Southern Pacific found it must rely largely on its own territory in order to get sufficient traffic to sustain the railroad.

So through the years, we have sought to foster industries along our lines by providing good service and fair and equitable freight rates which make possible the successful marketing of these industries' products.

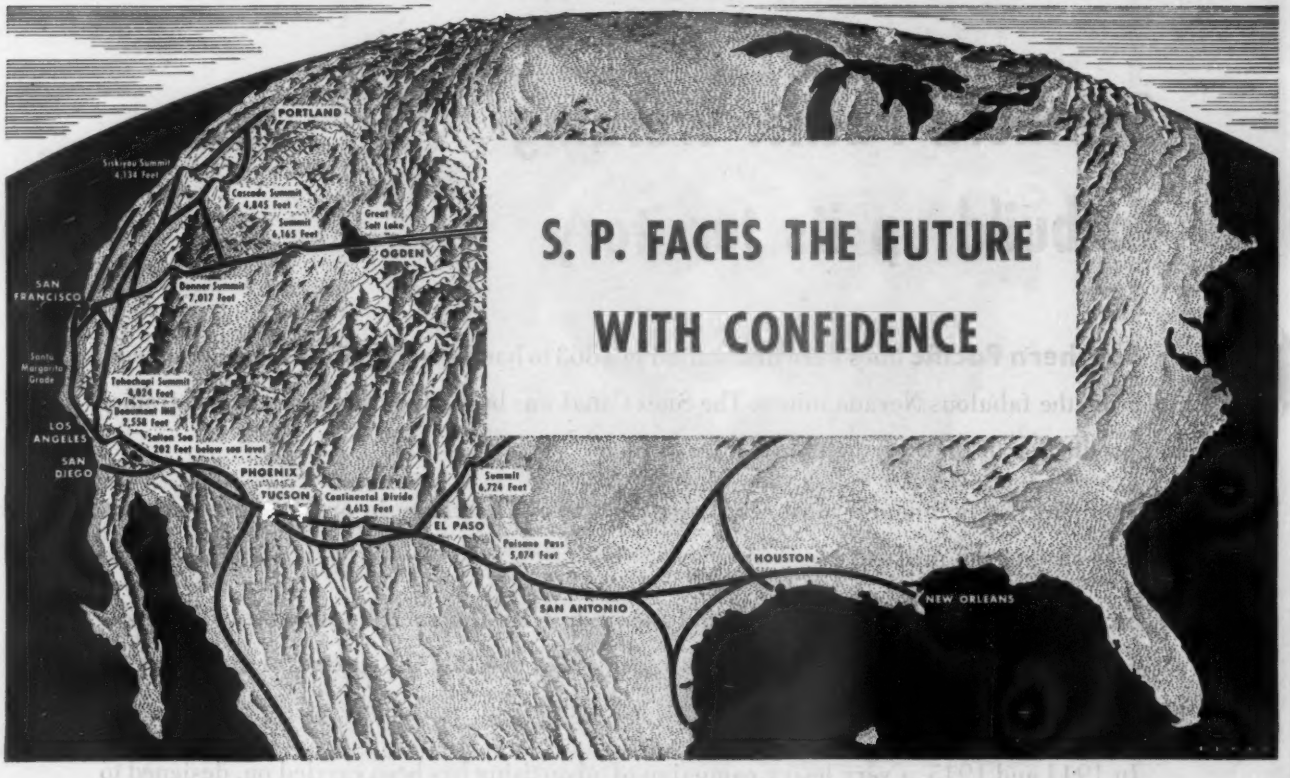
In 1944 and 1945, a very heavy campaign of advertising has been carried on, designed to impress industry with postwar prospects of the Southwest and West, and to influence establishment of new or branch plants in this area.

Southern Pacific, while seeking to bring in new industries, is keenly conscious of its responsibilities to its old friends, the industries already established along its lines.

(OVER)

(Centralized Traffic Control Board)





S. P. FACES THE FUTURE WITH CONFIDENCE

We, of Southern Pacific, look to the future with confidence. We will be a stronger railroad physically and financially when peace comes. We will be better able to keep step with, and have an important part in developing the territory we serve.

Our confidence is based, too, on the belief that the war record of the railroads has been such that the public recognizes the importance of rail transportation to the welfare of the nation in times of peace as well as war. We believe there is better public understanding of the fact that a railroad should have the same opportunity to make an honest living as any other private industry.

W. W. Hale
Vice President,
System Freight Traffic

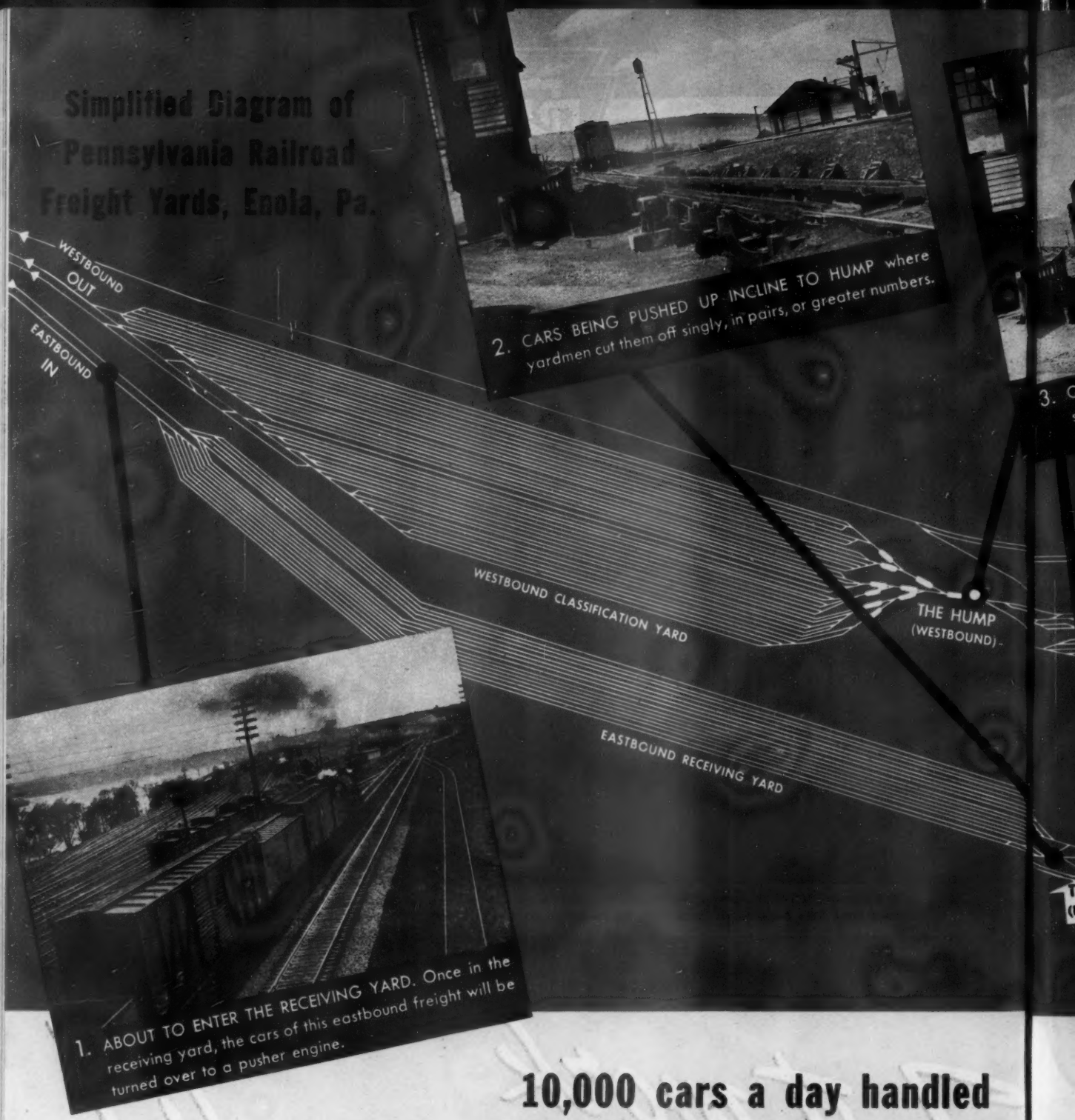
S·P The friendly Southern Pacific



TOWERMAN'S VIEW of a part of the immense classification yards of the Pennsylvania Railroad at Enola, Pa. By manipulating those little finger levers to his right, the towerman can literally "sort" freight cars as they come down the hump.

Fast work at the Crossroads!

Putting war freight over the hump at the big Enola Yards of the Pennsylvania Railroad.



10,000 cars a day handled —over 6,000 going "over the

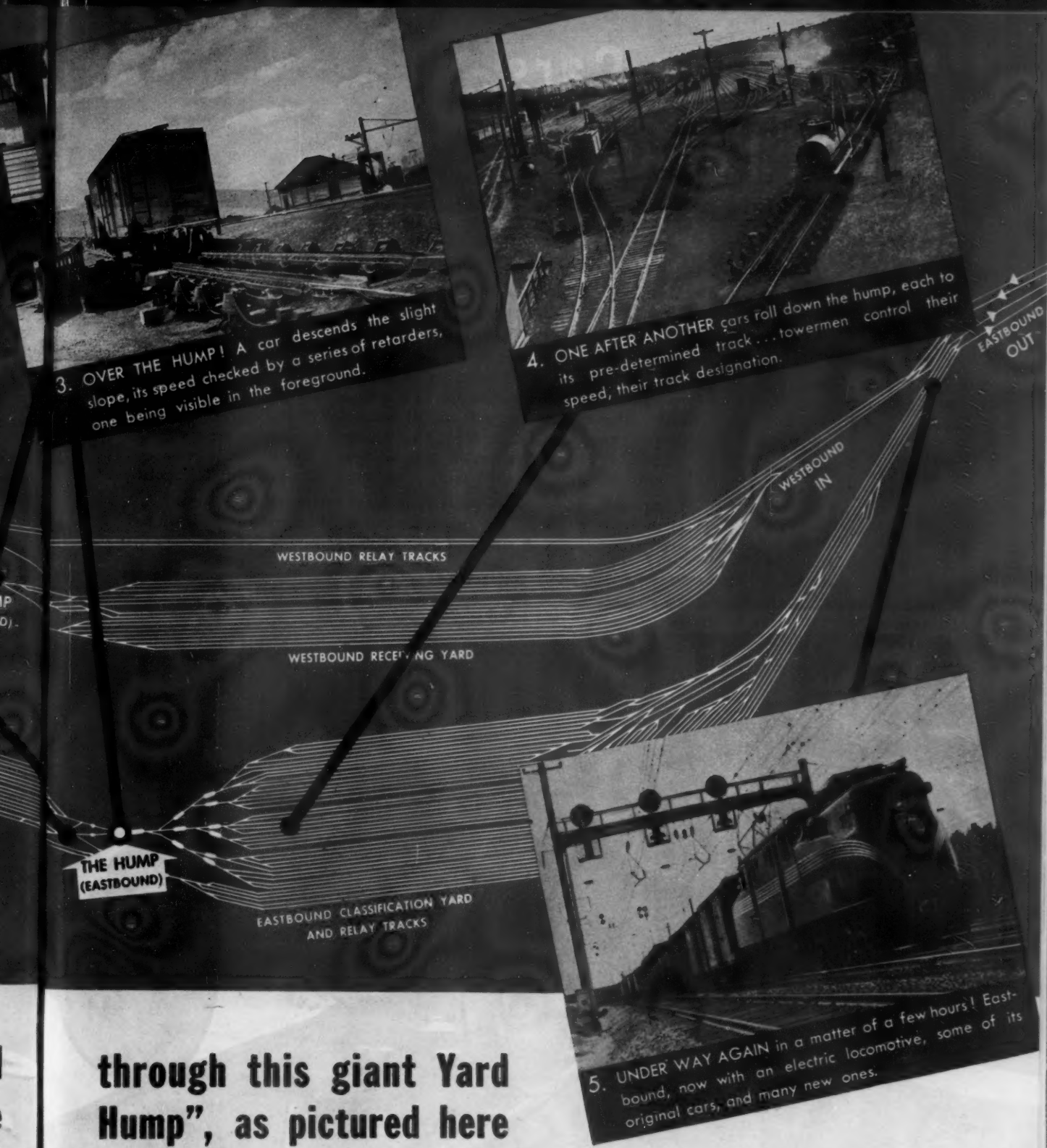
People ask, how can the railroads do it? . . . handle the greatest load in all history with fewer cars, fewer locomotives.

At Enola, Pa.—near Harrisburg—the great Pennsylvania Railroad freight yard graphically presents one of the answers to that question.

This Enola Yard is, in reality, the crossroads of the Pennsylvania system. Into it roll in continuous stream fast through freights from all directions—from western terminals, eastern seaboard cities, the north, the south.

Many of these big trains are so "made-up" they need pause only

BUY UNITED STATES WAR BONDS AND STAMPS



through this giant Yard Hump", as pictured here

for a change of engine—and are on their way. Others, however, must be "broken up"—and their cars distributed among other trains. There's where the speed and efficiency of the modern "hump" operation comes in!

Loud speaker system, teletype, retarders—every scientific instrument that can be effectively applied is at work in this "hump" operation—and throughout the yard. Add to this the tireless energy and enthusiasm of railroad workers themselves plus the splendid cooperation of shippers, the Army, the Navy—and that is why this one yard alone is speeding through 10,000 cars a day—4,000,000 a year!

PENNSYLVANIA RAILROAD

Serving the Nation

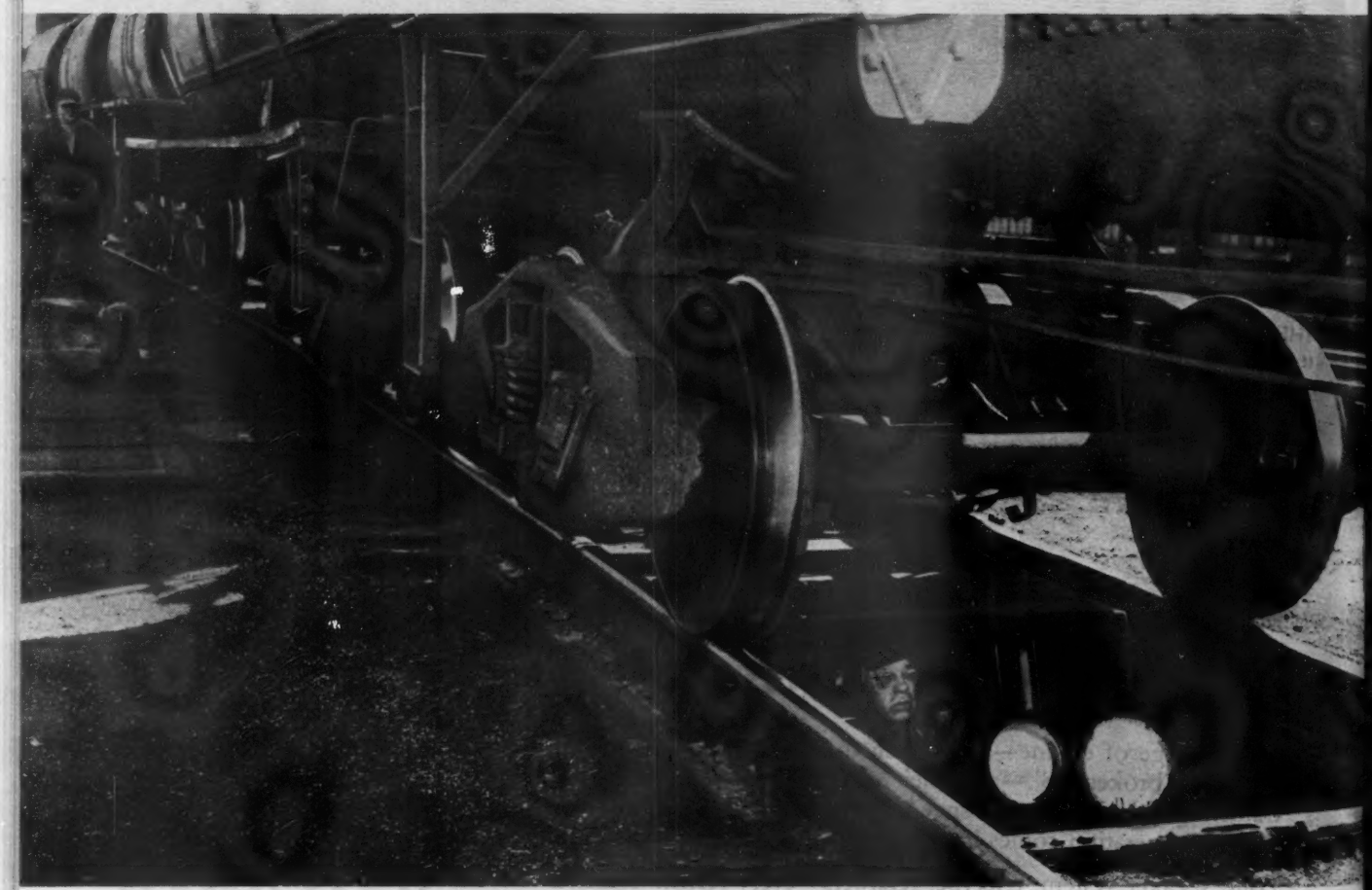
Inspecting Cars from "Foxholes"

The picture here illustrates one of the chain of modern methods employed at the Enola Yards to keep freight on the move.

A defective car can stop a train, paralyze all movement on a main track. To safeguard against that, cars going over the hump are inspected while being pushed up the incline to the hump.

Sitting on a high stool in a pit beneath a hump track, an inspector checks the cars passing overhead. A battery of high-powered lights illuminating the undersides of the car enables him to inspect quickly underneath portion of a car body, couplers and draft gear and all running gear, including wheels, axles, brake rigging, etc. If there is anything wrong, the inspector presses a button . . . a wheel is sprayed with whitewash to identify location . . . a buzzer sounds at the hump . . . and the car is taken out of "circulation."

Complete to the last detail, with an immense engine-house the heart of the yard, Enola at "the crossroads" of the Pennsylvania Railroad has everything to keep all classes of freight rolling—swiftly, economically!

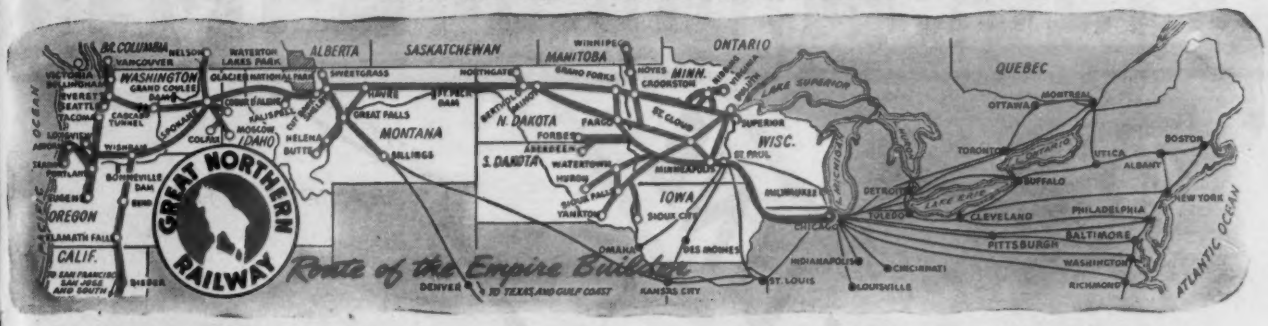


Inspector examining moving cars from underneath inspection pit.

PENNSYLVANIA RAILROAD

GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC





High-speed trucks, equipped with non-harmonic springs and steel wheels, are placed under framework. Car ends are steel.

LIGHTER, FASTER FREIGHT CARS OF PLYWOOD, STEEL AND LUMBER

Combination of Materials Results in Sturdiness, Less Weight

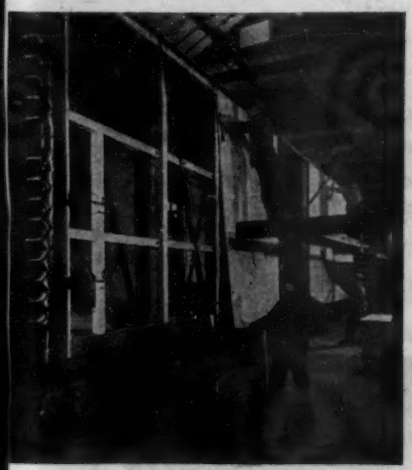
Construction of the American railroad industry's first plywood-steel freight cars is under way by Great Northern Railway in its own shops.

Another symbol of progressiveness—*one of the many things which make Great Northern great*—1,000 of these new, bright orange-painted freight cars will be in wartime transportation service before Winter.

Developed by company technicians, the modern, 50-ton capacity cars are a combination of steel, Douglas fir plywood and lumber.

Lighter-than-conventional steel was utilized for underframes, while lumber and steel form the superstructures. Outside and inside sheathings, including ceilings, are of ⅝-inch plywood. To prevent warping, the plywood is treated with a "sealer."

Two tons lighter than the conventional boxcar, the plywood-steel units roll faster because of high-speed trucks, non-harmonic springs and wrought steel wheels. Steel ends and metal roofs add to sturdiness.



Sheathings of ⅝-inch Douglas fir plywood are placed outside and inside steel and lumber superstructure.



Interiors are sprayed with varnish. The plywood first is treated with a "sealer" to prevent warping.



Plywood panels are bolted and nailed to superstructure of steel and lumber.

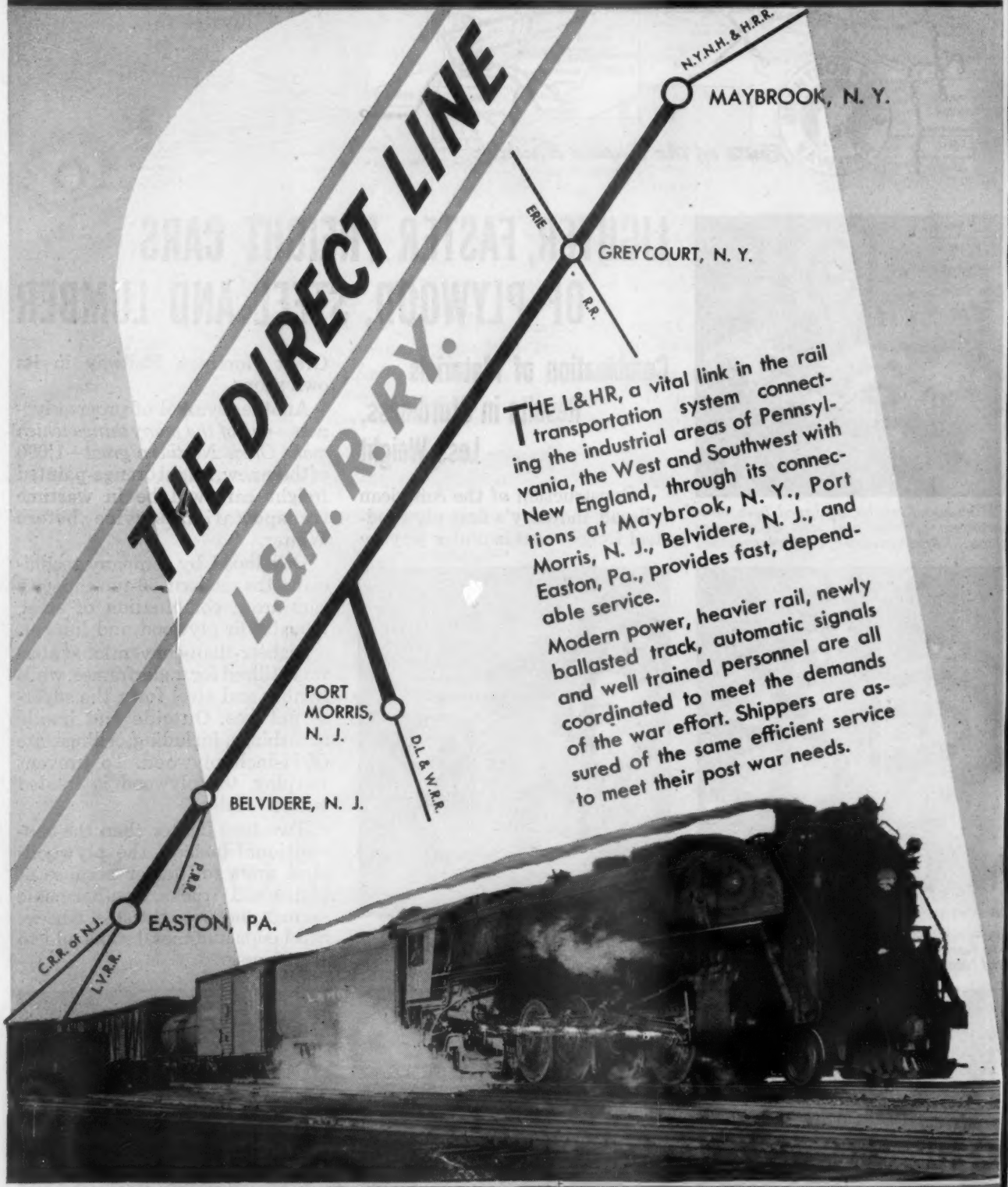


Powered by G. N.'s newest 5,400-horsepower diesel locomotives, a 100-car train of plywood-steel cars approaches Glacier National Park en route to the Pacific Northwest.

Please turn to page 201→

LEHIGH & HUDSON RIVER

THE DIRECT LINE
L.&H.R.RY.



THE L&HR, a vital link in the rail transportation system connecting the industrial areas of Pennsylvania, the West and Southwest with New England, through its connections at Maybrook, N. Y., Port Morris, N. J., Belvidere, N. J., and Easton, Pa., provides fast, dependable service.

Modern power, heavier rail, newly ballasted track, automatic signals and well trained personnel are all coordinated to meet the demands of the war effort. Shippers are assured of the same efficient service to meet their post war needs.

THE LEHIGH & HUDSON RIVER RAILWAY COMPANY

WARWICK, N.Y.



DURING 1944, six more 5400 h.p. Diesel electric freight locomotives and ten additional 4-8-4 steam freight locomotives were placed in service. Four 1000 h.p. Diesel switchers were also added to the large fleet in this class. 2,268 freight cars of various types were constructed in The Milwaukee Road's Shops.

★ ★ ★

Construction of a new line between Birmingham, Mo., and Kansas City is complete except for the erection of the lift span on the Missouri River bridge. This new entry to Kansas City is expected to be ready for operation by this June, while before the year's end, greatly improved terminal facilities in Kansas City will be in full use.

A large warehouse building was erected in Seattle and other additions were made to freight handling facilities along the line.

★ ★ ★

Heavier rail was laid, passing tracks lengthened, and new yard tracks constructed to handle increased traffic. During 1944 The Milwaukee Road increased its mileage operating under centralized traffic control, and this system for increasing single track capacity is being rapidly extended. Improvements and additions were made in interlocking plants and in signal systems to expedite the flow of traffic in yards and on the line.

★ ★ ★

This program, continuing through 1945, is The Milwaukee Road's current contribution to freight progress. The fourth year of war finds our plant and personnel prepared to carry our full share of the nation's traffic and in readiness to take on the additional burden which a concentration of military might in the Pacific may bring us.

E. W. Soergel, Freight Traffic Manager
Chicago, Illinois

M. H. McEwen, Western Traffic Manager
Seattle, Washington

THE MILWAUKEE ROAD



A NEW DAY DAWNS FOR SOUTHERN INDUSTRY

HISTORY is being written in the South today... a history of new industrial production... of progress that will mean much to the South in the future.

Under the impetus of war, hundreds of small and large industrial plants have sprung to life throughout our southern states, utilizing the rich resources of this region as never before! Thanks to the resourcefulness of industrial chemists, dozens of new uses have been developed for southern agricultural products. The vast stores of southern minerals, timber and chemicals, comprising one of the richest stock piles of raw materials in the world, are yielding new opportunities undreamed of a few years ago.

Today, southern industry, labor and agriculture stand solidly behind Uncle Sam in a single purpose... Victory! When there is no longer need for guns and bombs and ships, the great developments borne of war will mean even greater progress for the South in peacetime.

The progress already made barely scratches the surface in the light of all that could be done. When this war is over the South is destined to become one of the truly great industrial regions of the world. To this end the N. C. & St. L. will continue to devote its efforts.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY

BACK THE ATTACK
—BUY BONDS

N.C.&St.L.



RAILROAD PROGRESS

is graphically portrayed in these contrasting views of old and new locomotives. The scene above depicts the arrival of the first Missouri Pacific engine at St. Louis in 1852. This pioneer iron horse, which traveled from New England by sailing vessel and steamboat, made transportation history when it pulled the first railroad train ever operated west of the Mississippi River.

Below is a modern 5400-H.P. Diesel-electric locomotive which helped make history, too—in 1944, when the Missouri Pacific Lines provided the greatest volume of freight and passenger transportation in their 93-year record of service.

Now, More Than Ever MISSOURI PACIFIC LINES *"A Service Institution"*

MISSOURI PACIFIC LINES

H. M. JOHNSON
CHIEF TRAFFIC OFFICER

SAINT LOUIS

SPEAKING OF PROGRESS —

Back of every achievement is an idea. And the idea that for 20 years has dominated the thinking, the planning and the efforts of the Missouri Pacific Lines and employes is summed up in one word--Progress.

Only a railroad that constantly strives to keep progressive could have so successfully shouldered such a large share of the Nation's war-time load as that carried by the Missouri Pacific Lines.

Each year since Pearl Harbor has seen an increase in the volume of service rendered. Measured in revenue ton miles, freight service performed last year was 102 percent greater than that rendered in 1941, 160 percent greater than that performed in the pre-war year of 1940 and almost double the amount performed in the peak traffic year of the previous World War.

And if the Nation's war needs demand it, the Missouri Pacific will set another record this year, for in spite of shortages our plant has been maintained at top efficiency and at no time have the calls made upon it exceeded its capacity.

Progress, the dictionary says, means "moving forward," but to the Missouri Pacific Lines and employes, progress means seeking and finding new and better ways of serving the public. It means the adoption of modern methods, the purchase of the most efficient tools--more powerful locomotives, sturdier cars, safer signaling devices, improved communications--it means laying heavier steel rails, raising tracks beyond the reach of flood waters, enlarging yards, modernizing freight stations, in fact anything and everything that enables us to render a more dependable and satisfactory transportation service.

But our progressive efforts are not confined to physical improvements and betterments. We of the Missouri Pacific Lines strive to be equally as progressive in our relations with our patrons and welcome opportunities to render special services, and to prove our railroad's right to be known as "A Service Institution."

H M Johnson
Chief Traffic Officer

Speaking of PROGRESS . .

"The record of American railroads for the past twenty years has been one of consistent improvement in operating efficiency and economy. As a result of these factors more freight is being hauled and more passengers being carried with fewer locomotives than were used during the first World War.

"Indeed, the record of accomplishment during the past three years is breath-taking and, at the same time, a vindication of the theory that intelligent free enterprise can produce more and better than any other system yet devised.

—HARTFORD, CONN., "COURANT"

Speaking of PROGRESS . . . .

Making a good railroad better is a never-ending task, and in 1944 Missouri Pacific Lines' track forces laid 234.2 miles of new rail and 194.6 miles of relay rail, and welded rail ends along 362 miles of track. Since 1924 more than 5400 miles of new rail have been installed by the Missouri Pacific Lines — enough for five tracks between St. Louis and Denver.

★

Already the world's largest user of Centralized Traffic Control, Missouri Pacific Lines last year completed installations which approximately doubled the track capacity of one of the Nation's busiest traffic arteries and which makes it possible for trains to be operated entirely by signal indication between Poplar Bluff, Mo., and Longview, Tex. — the longest stretch of track in the world where trains need not stop to pick up written train orders or for switches to be thrown manually. Also last year 255.6 miles of automatic color light signals were installed.

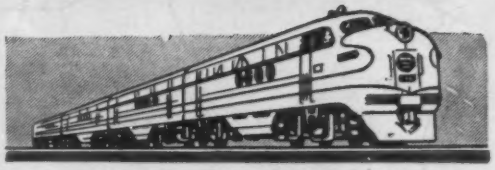
★

Rail-flaw detector cars covered more than 16,000 miles of main line Missouri Pacific Lines' track last year — a part of the railroad's progressive safety efforts. Since adoption of this form of protection to patrons, detector cars have inspected a total of 151,900 miles — an inspected mileage greater than that of any other railroad employing this method of preventing accidents.

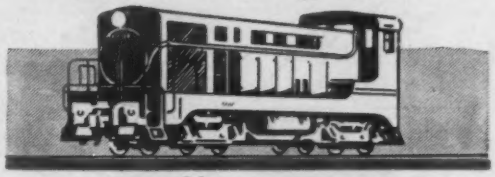
★

Busy as they are, Missouri Pacific Lines' employes find time to say a smiling "Thank you" to patrons, with the result that readers of American Business Magazine which conducted a nation-wide poll on courtesy said more votes were cast for the Missouri Pacific (voted the "most courteous") than for any other two railroads.

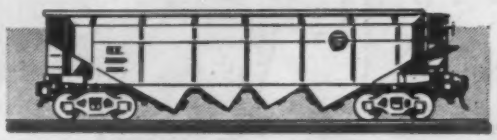
Additions to Missouri Pacific Lines Equipment in 1944 Included



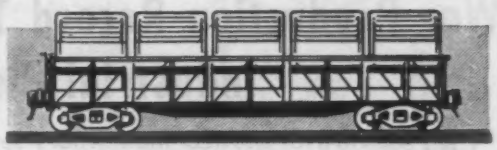
Three 5400-HP Diesel Freight Locomotives



Eight 1000-HP Diesel Switch Locomotives



1399 70-Ton Hopper Cars



22 50-Ton Container Cars



100 40-Ton Stock Cars

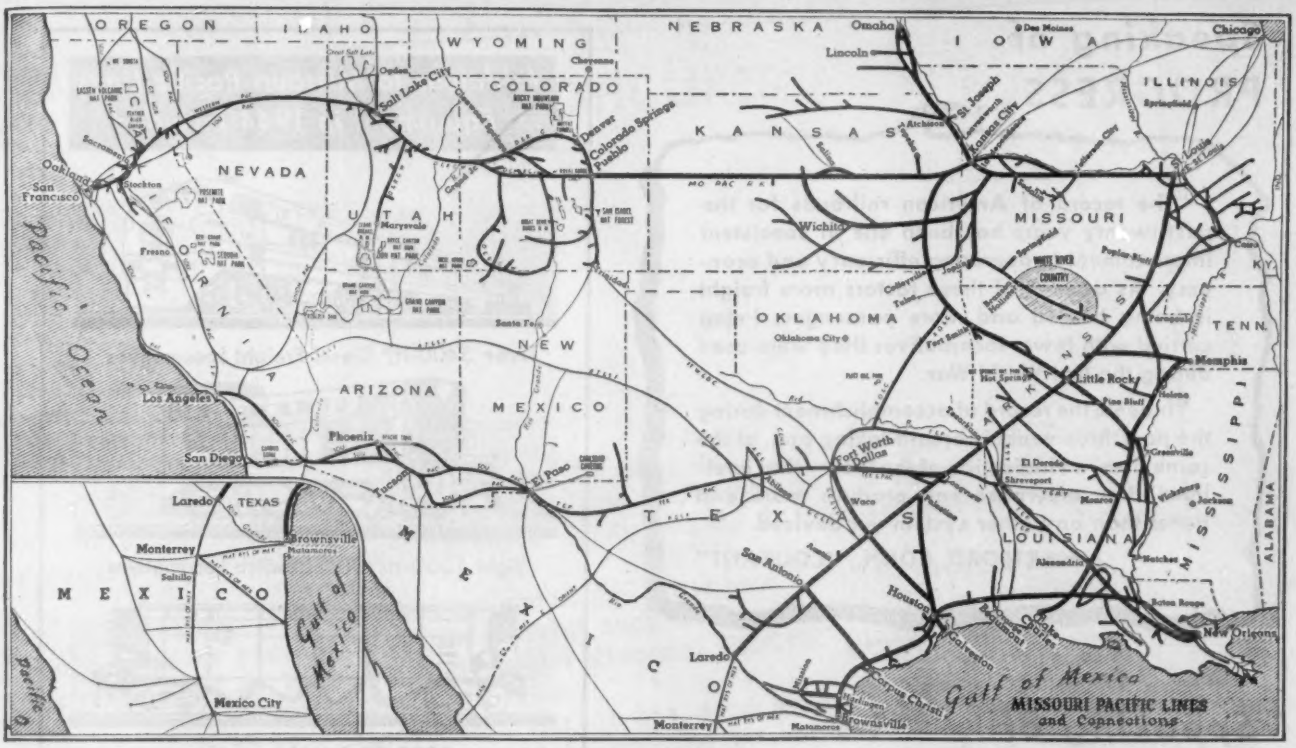
New Equipment On Order:

Two more 5400 horsepower Diesel-electric freight locomotives, nine more 1000 horsepower Diesel-electric switch locomotives, 1450 box cars, 75 hopper cars, one 4000 horsepower Diesel-electric passenger locomotive and six light weight Eagle passenger coaches.

Soon To Be Ordered:

Modern light weight equipment to replace the present conventional equipment of the Sunshine Specials, including: Four 4,000 horsepower Diesel-electric locomotives, 32 light weight sleeping cars, two dining lounges, 21 coaches and eight express, mail and baggage cars.





A War Production Record Too Important to Be Overlooked by Industrial Planners in Peace Time

WAR TRANSFORMED the territory served by Missouri Pacific Lines into an arsenal for America and her allies — an industrial center with almost limitless resources and tremendous capacity — and a training ground for millions of fighting men.

Supplying dependable transportation for this vast area is a vital wartime responsibility of the Missouri Pacific Lines, which serve 84 important military camps and bases and 105 major war industries in the West, South and Southwest, 123 of the total being served exclusively by Missouri Pacific Lines.

Many factors — climate, raw materials, fuel, power, skilled labor and adequate transportation—have contributed to the impressive war production record of Missouri Pacific territory. The same advantages will be available to and will work as effectively for peace time business and industry.

The natural resources of the West, South and Southwest have been surveyed and catalogued by Missouri Pacific industrial engineers and the Industrial Development Department will be glad to supply this information and data concerning new plant sites and areas most promising for business and industrial expansion.

Inquiries addressed to the Missouri Pacific Lines Industrial Development Department at St. Louis, Mo., or Houston, Texas, will receive prompt, confidential handling.

Now, More Than Ever — MISSOURI PACIFIC LINES — *"A Service Institution"*

WARTIME SKETCHES from the "CENTRAL FRONT"

TODAY, these men of New York Central are developing new efficiencies to keep the record wartime freight rolling.

TOMORROW, they'll combine those wartime lessons with finer post-war equipment and service to speed your shipments on the Water Level Route.

NEW YORK CENTRAL SYSTEM



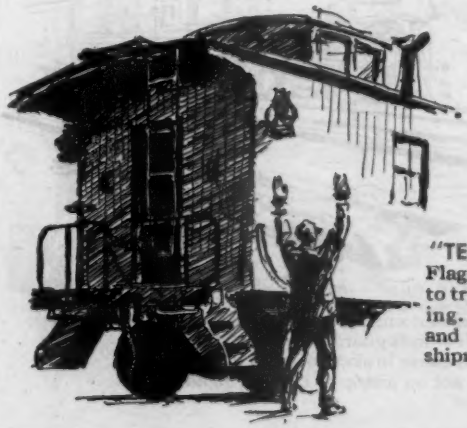
SECONDS COUNT!
Engineer and Freight Conductor compare watches. Time is vital, with a freight train starting out over N. Y. Central every 55 seconds!



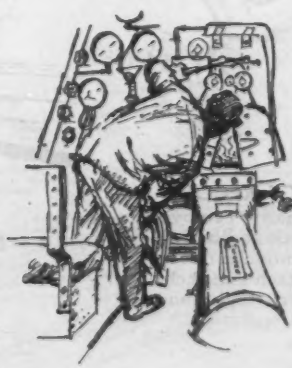
"MARKERS"
When Flagman hangs them up, a string of cars becomes officially a train—ready to move its share of 196,000,000 tons a year carried by N. Y. Central.



OFFICE ON WHEELS
Conductor at Caboose table writes up his "wheel report." Through conductors' reports, any of America's 1,800,000 freight cars can be located any time.



"TEST BRAKES"
Flagman signals Engineer to try brakes before starting. Repeated checking and testing protect your shipments on N.Y.Central.



"CRACKING HIS DOORS"
Fireman checks to see that stoker is firing efficiently. It takes *power* to haul mile-long war freights, even on the Water Level Route.



"PUTTING DOWN HIS GUNS"
If stopped between stations, Flagman puts out torpedoes to warn next train—an *extra* safeguard, as automatic signals and train control protect N. Y. Central's main line.



CABOOSE COOKERY
When freight and meal schedules overlap, train crews dine en route. And many a good dinner is cooked over the caboose stove.





OBSERVATION POST
From caboose cupola, Brakeman keeps eye on cars ahead. Eternal vigilance protects freight routed via N. Y. Central.

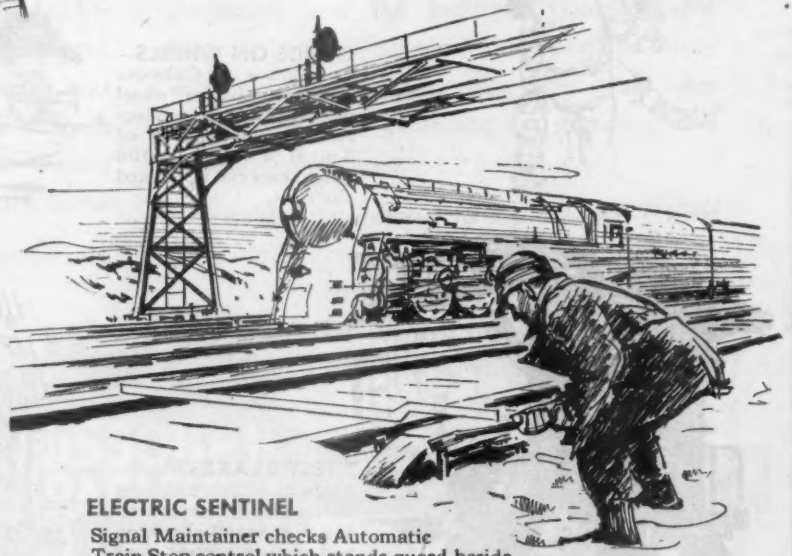
PATROL DUTY
Maintenance men stop their motor rail car beside latest type automatic N.Y. Central signal, while they go aloft to inspect and clean powerful new fog-piercing reflectors and lenses.



CURRENT SLEUTH
Inspector measures current that controls automatic signals. It runs through rails—an extra protection, as any break in circuit would halt trains.



SAFETY-EFFICIENCY RECORD
Roundhouse Mechanic removes tape from Valve-Speed Indicator in engine cab. This modern device keeps a record of each run, helps N. Y. Central maintain high standards of safe, efficient operation.

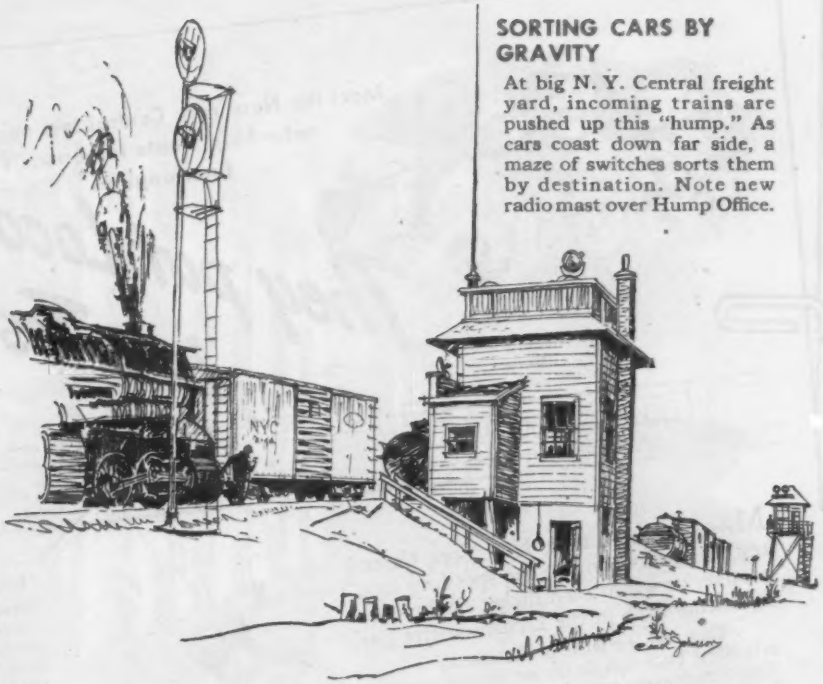


ELECTRIC SENTINEL
Signal Maintainer checks Automatic Train Stop control which stands guard beside track. This device would cause brakes to go on if Engineer should fail to act on a stop or caution signal.



TEAMWORK BY RADIO

Hump Conductor talks with yard engine crews on new two-way radio. Radio, backed up by signals, aids closer teamwork and smoother handling of your shipments.

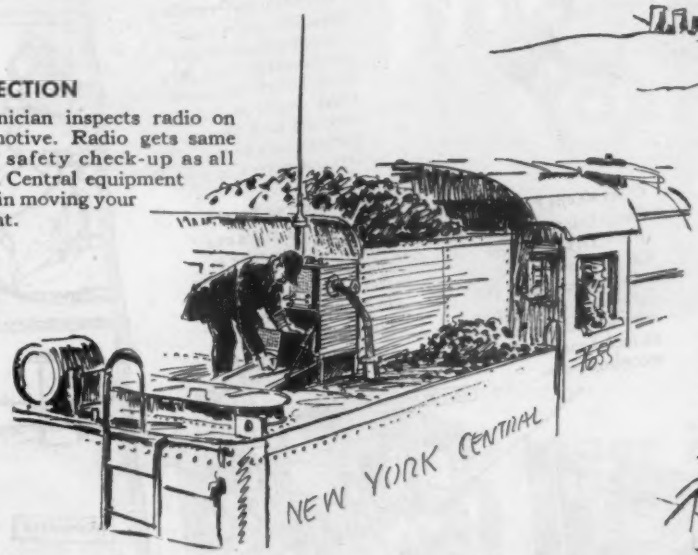


SORTING CARS BY GRAVITY

At big N. Y. Central freight yard, incoming trains are pushed up this "hump." As cars coast down far side, a maze of switches sorts them by destination. Note new radio mast over Hump Office.

INSPECTION

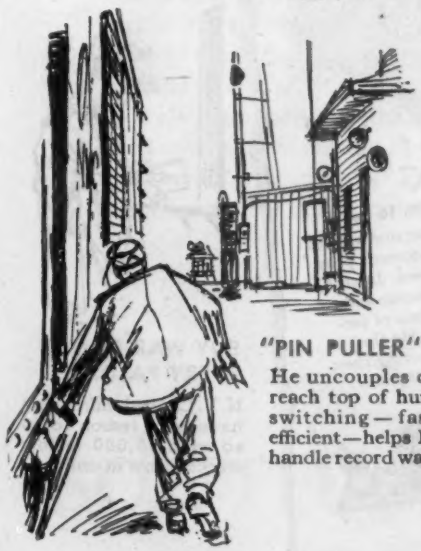
Technician inspects radio on locomotive. Radio gets same rigid safety check-up as all N. Y. Central equipment used in moving your freight.





"HOLD IT, JOE!"

Engineer applies brakes as loudspeaker in cab calls order. N. Y. Central pioneered radio experiment in 1920 and is now testing wartime advances in this field.

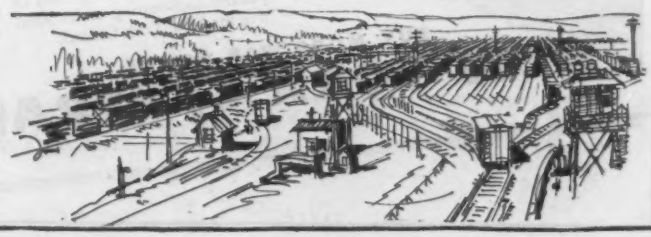


"PIN PULLER"

He uncouples cars as they reach top of hump. Gravity switching — fast, smooth, efficient — helps N.Y. Central handle record wartime traffic.

REMOTE CONTROL

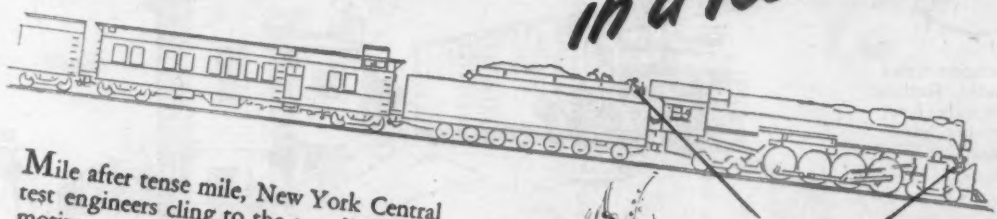
Radio control has many uses in vast N. Y. Central yards. One yard has 125 miles of track, and classifies 2,000,000 cars a year!





Meet the New York Central test engineers who help create tomorrow's finer engines

They put Locomotives in a Test-Tube



Mile after tense mile, New York Central test engineers cling to the speeding locomotive, or watch each flicker of the instruments back in the Dynamometer Car.

They feel the pulse of the mighty cylinders. They sample the smoke-box gases. They weigh every pound of coal for the firebox and every ton of pull on the drawbar. And steadily, the data they gather is recorded on the Dynamometer Car's moving chart. For this little car with the big name is their "laboratory on wheels"... where they figuratively put 250 tons of locomotive in a test-tube to study its performance.

Today, their work helps New York Central operate more efficiently as a vital link in the wartime supply line. And tomorrow ... when critical materials are again available ... their records will point the way to still finer locomotives for the future.



"Scientists in Overalls"
Dressed in overalls and protected by temporary windbreakers, these New York Central engineers check engine performance and flash their findings back to the Dynamometer Car.

Chart Keeps Pace with Train
Gears link the wheels of the Dynamometer Car to these paper rolls. For each yard the car travels, the paper moves a fraction of an inch beneath the recording pens.

Tons on a Pen Point!
These oil cylinders can reduce a locomotive's 500,000-lb. pull to a tiny force that moves a pen in New York Central's Dynamometer Car.

He Puts "Dine" in Dyn-a-mometer
Testing a locomotive often takes weeks. So the staff lives aboard the Dynamometer Car. A New York Central dining car chef goes along to serve hearty meals.



Tester in Chief
Either the Dynamometer Engineer, or his senior assistant, directs every detail in the complex and important task of performance-testing a locomotive for New York Central.

He writes with 16 Pens!
The Chart Operator watches over the 16 automatic pens that record speed, distance, pull, steam pressure and a dozen other items of performance data. He also notes on the moving chart facts phoned in by other observers.

BUY MORE WAR BONDS

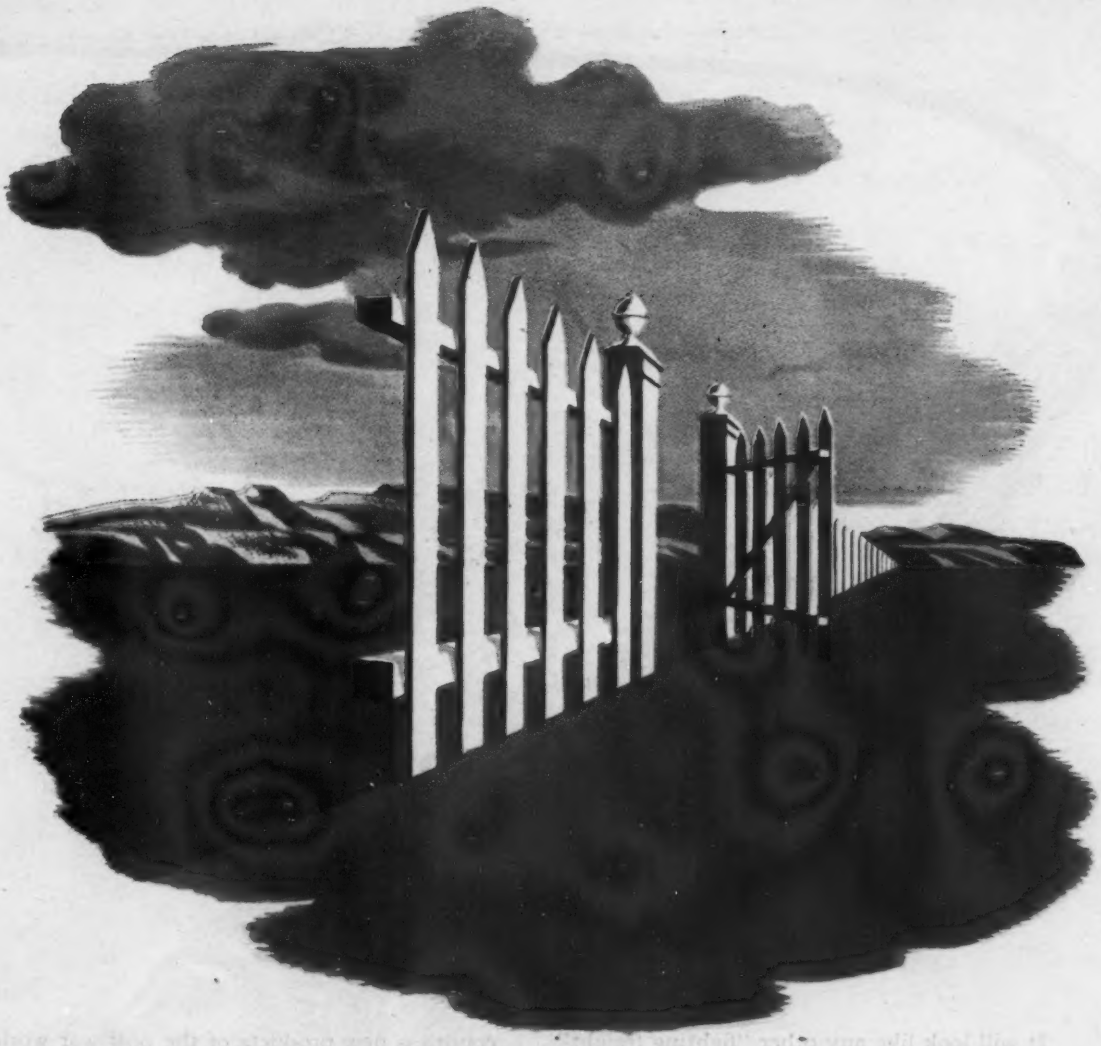
NEW YORK CENTRAL





BUY WAR BONDS EVERY PAYDAY

N.Y. Central railroaders have extra reason to do so with 26,000 fellow workers now in uniform.



The grass IS greener in our yard

Naturally! Because the Southland is rich in fertile soil and sunny skies and warm rainfall.

Most of the South has a growing season of six months or longer.

It also has nearly two-thirds of all the nation's land with annual rainfall of 40 inches or more!

There's "greener grass," too, for industry and commerce in the South . . . unlimited natural resources . . . steady, intelligent labor . . . every favorable condition for growth and prosperity.

And just as the Southern Railway System measures up to its great transportation assignment in the war, so will it be ready to meet the expanding post-war needs of the South—where the grass IS greener. We believe it's time *now* to "Look Ahead—Look South!"

SOUTHERN RAILWAY SYSTEM

The Southern Serves the South

THE LAST TRAIN OF WAR FREIGHT...

It will look like any other "fighting freight" you see rolling on the Southern Railway these days.

But it will be the last train heading off to war.

Then, "tomorrow" will begin . . . a glorious new era of peace and freedom for war-weary people everywhere. Then, tents and uniforms from Southern textile mills will become gay frocks for laughing, carefree girls.

Then, strong Southern steel that made massive tanks, will build bridges and skyscrapers.

Then, gleaming Southern aluminum, miracle plastics and vital chemicals will go into the countless new products of the post-war world.

And then, the Southern Railway will be ready with the matchless efficiency and dependability which has been developed in the "testing laboratory" of total war.

Yes! . . . it will be a great day for the South . . . and for the Southern Railway . . . when that "last train" pulls out. For it will mark the beginning of a new-found peace and prosperity in a Southland of unlimited opportunities.

Ernest E. Norris

President



SOUTHERN RAILWAY SYSTEM



The Southern Serves the South

THE SOUTHERN SR SERVES THE SOUTH



"The Southern Serves The South." How? By providing adequate, efficient, dependable, economical freight and passenger transportation, of course. But that's not all!

The Southern also serves the South by means of a smoothly-functioning special department devoted exclusively to the promotion of a healthy, prosperous agriculture and industry throughout its territory . . . the Southern Railway Industrial and Agricultural Development Department.

This department gathers accurate data concerning industrial opportunities of all kinds throughout the South . . . natural resources, water power, labor supply, etc. . . . and makes this information available to those interested in the establishment of manufacturing plants.

It engages in promoting the welfare of the agricultural South by studying farm conditions, encouraging diversified and more profitable crops, recommending the introduction of pure blooded livestock and poultry, and assisting in the establishment of creameries, cheese and milk-condensing plants for the utilization of dairy products.

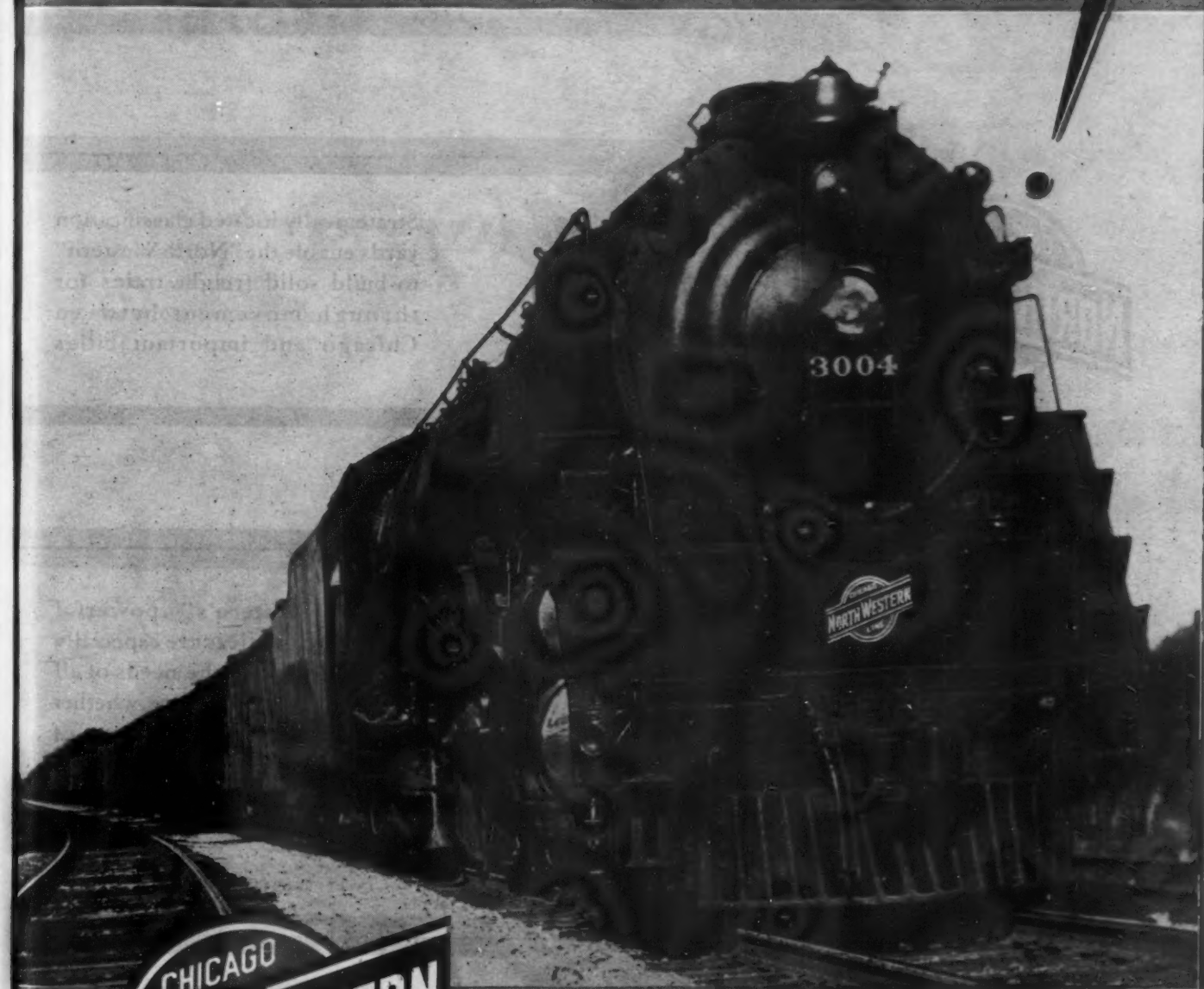
Look Ahead . . . Look South! And as you do, remember that all of the facilities of this fact-finding agency are at *your* disposal.

If you need information of any kind for post-war planning—now or in the future—write to the:

INDUSTRIAL AND AGRICULTURAL
DEVELOPMENT DEPARTMENT
Southern Railway System, Washington 13, D. C.

SOUTHERN RAILWAY SYSTEM

On the March!



CHICAGO AND NORTH WESTERN SYSTEM

KEEPS PACE WITH VICTORY DEMANDS



"North Western's" 32,000 employes stand as one man united in a common cause—Victory. These skilled men and women join in moving freight quickly



Strategically located classification yards enable the "North Western" to build solid freight trains for through movement between Chicago and important cities



"North Western's" powerful freight locomotives are especially designed to meet the needs of all "North Western" patrons, whether for high-speed shipments of



More than 50,000 cars of all types are available to "North Western" shippers, including nearly 23,000 box cars built and maintained to the high standards so

SERVING AMERICA IN WAR AND P

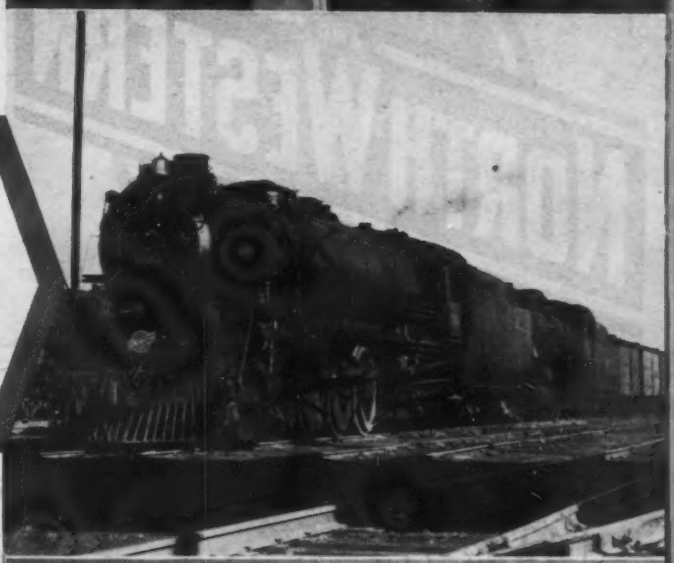
and safely. They're doing the most important job they have ever tackled, working long hours, day after day, week in and week out. And they're doing the job well.



west, northwest and north without the necessity of switching trains at intermediate points. Speed and efficiency come first—trains must be kept rolling.



Tokyo-bound munitions or for heavy trainloads of iron ore and coal. These power plants symbolize the strength and ruggedness of America, the inherent qualities that assure victory.



necessary for transporting grain products. In 1944 "North Western" ranked first in bringing many important grains as well as livestock into the Chicago market.



D PEACE FOR ALMOST A CENTURY

Consult Us on Post-War Plans



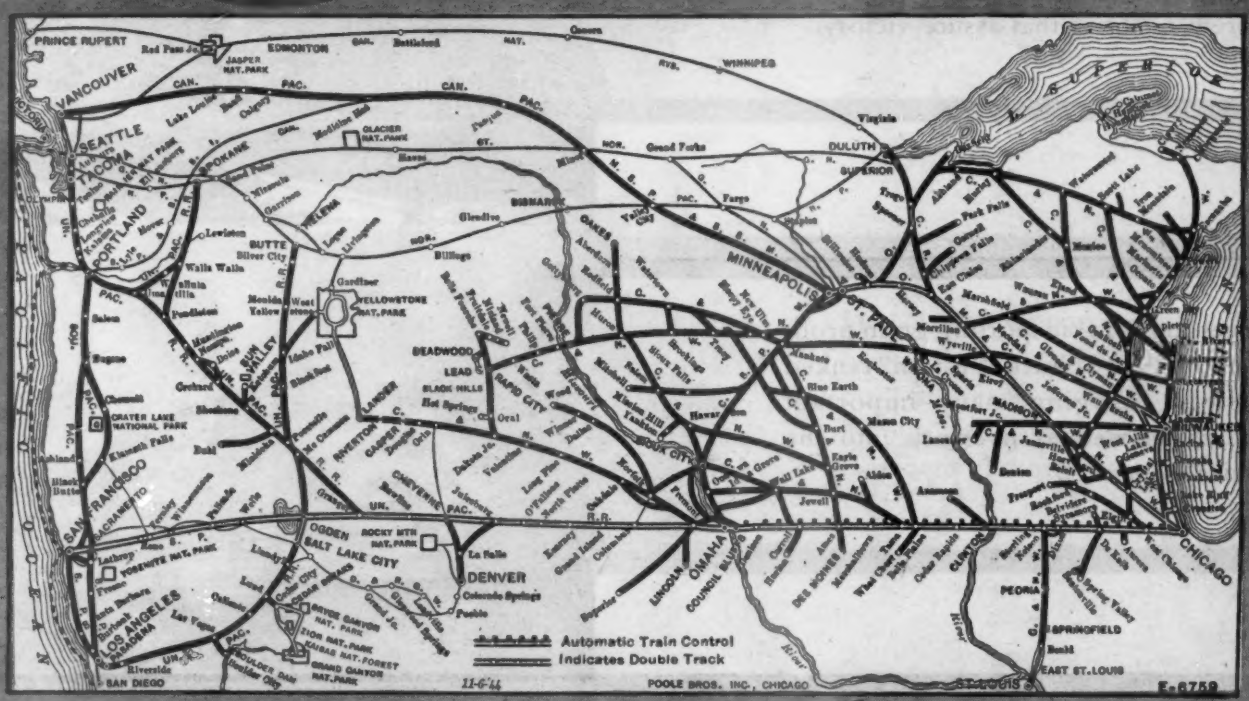
Will the post-war era necessitate a change in your plans? Will a location near raw material sources prove beneficial?

The Industrial Department of the Chicago and North Western System is conducting continuous studies of the resources and industrial potentialities of the nine midwestern states through which we operate. The rich mineral deposits, timber reserves, unlimited water supplies, electric power, fertile soils, and well-educated native population make of these states a region of exceptional opportunities for industrial expansion. "North Western's" 10,000 miles of modern railroad insure unexcelled transportation facilities for both raw materials and finished products.

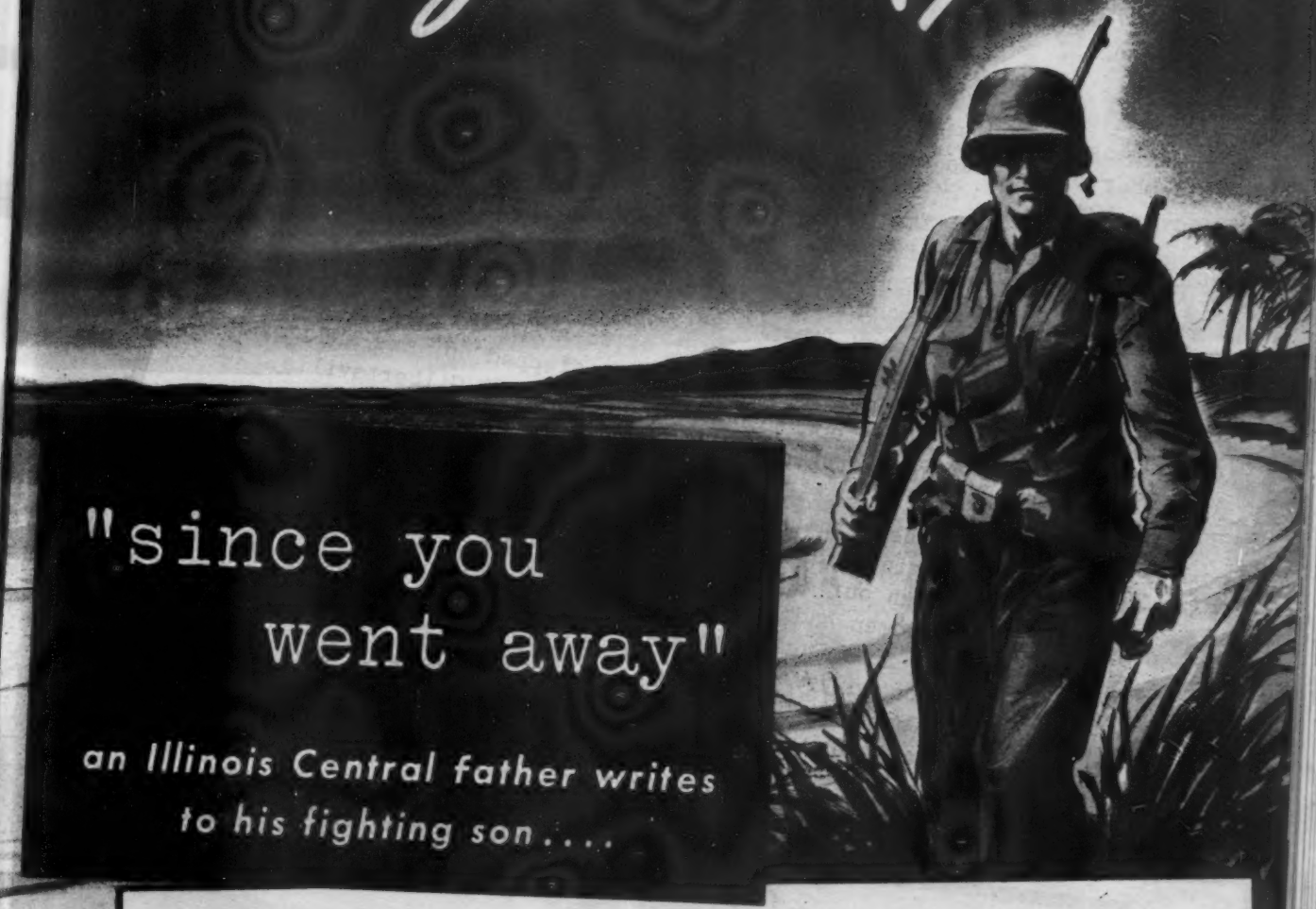
We will gladly furnish full information concerning potential industrial locations—surveys of plant sites, resources, markets, etc. Consult your nearest "North Western" traffic agent or write direct to:

C. E. CASE,
General Industrial Agent,
Chicago and North Western System,
400 W. Madison Street,
Chicago 6, Illinois

CHICAGO AND NORTH WESTERN SYSTEM



ILLINOIS CENTRAL
Progress Report



"since you went away"

an Illinois Central father writes to his fighting son....

Dear Jim:

So you want to know how things are going with your old railroad? That proves you're still an Illinois Central man, even when you're busy polishing off the Japs.

You'll be proud of the record the Illinois Central has made since you went away. I've been reading up on that subject in the annual report which has just been made to all of us by Wayne Johnston, our new president. Listen to this:

During 1944 we produced more than 55 billion gross ton-miles of freight service, almost equaling our 1943 all-time record. Our coal traffic hit a new high peak of nearly 26 million tons, far above our previous best. Several new mines have been developed, and these helped better our 1944 high mark in the first seven weeks of 1945, even though the average for the country dropped.

Our direct freight service to and from the 142 defense plants and military establishments on or near our lines was

Central Artery of the Nation

ILLINOIS CENTRAL *Progress Report*

noticeably above our best previous record in this war. We are producing – and hauling – what YOU need.

We have moved plenty of your fellow-servicemen, too – operated nearly 3,000 special military trains for nearly 1,400,000 passengers in 1944. We also handled more civilians. The total number of revenue passengers on through trains was a marked increase over 1943.

We have improved our equipment, too. We added a million pounds to the tractive effort of our locomotives by raising steam pressures, installing mechanical stokers and so on. We added considerably to our supply of 2300 and 2800 class locomotives for fast passenger and heavy freight service.

We have likewise done a lot of work on our track. The installation of heavier 131-pound rail was stepped up, and a couple of big new bridges were opened, one over the giant Gilbertsville, Ky., dam and another more than a thousand feet long over the Yazoo River.

Doing these things required a large family of workers, as you may well imagine – an average of 41,732. More than 3,000 young folks went through our training schools last year. Nearly 9,250 of our men and women had gone into uniform by the end of the year. Of 516 released from Uncle Sam's service, 456 are back with us, just as you'll be some day.

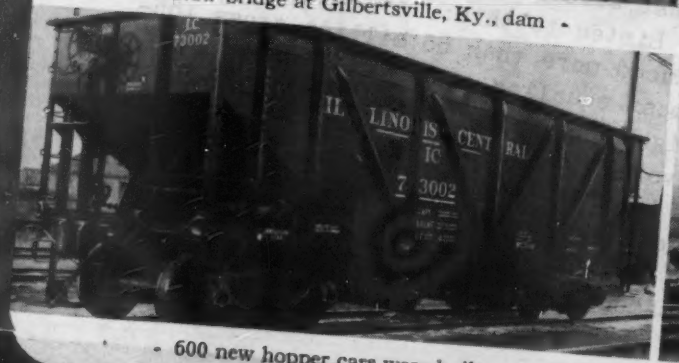
Our employes' suggestion system is giving us more help than ever. Last year we submitted nearly 27,500 ideas for greater efficiency and safety and drew down awards totaling more than $65,000 for nearly 6,000 of these.



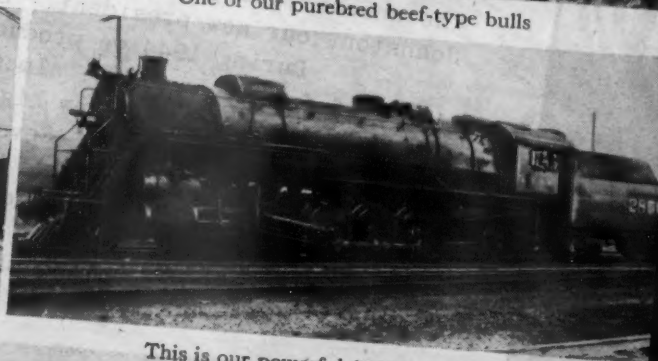
New bridge at Gilbertsville, Ky., dam



One of our purebred beef-type bulls



600 new hopper cars were built



This is our powerful 2800 locomotive

Central Arteries of the Nation

ILLINOIS CENTRAL *Progress Report*

We've done a fine job on employe safety, too. Our 1944 record was the best in Illinois Central history and won us the National Safety Council's special "S" pennant for twice making outstanding safety improvements in wartime.

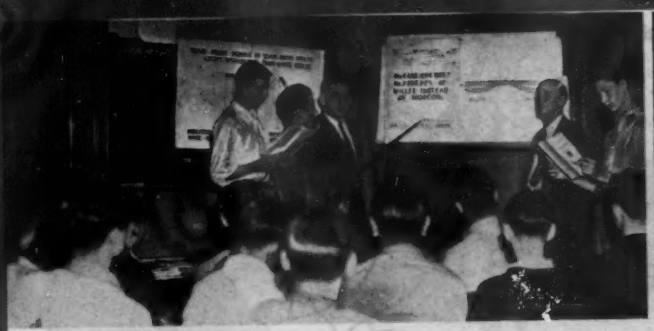
We have also begun campaigning to reduce rail-highway crossing accidents, and the rails in more than 9,500 miles of track were tested for hidden flaws.

We've been thinking about the future of our traffic, too. New industries, mostly of a non-war nature, established along our lines last year will have an annual production value of nearly 36,000 cars of new business. Increasing southern small grain production has led manufacturers to plan four grain elevators in the Mississippi Delta. We are continuing to provide purebred beef-type bulls for breeding, and our farm development people held 400 public meetings last year in the interest of building up livestock and soil.

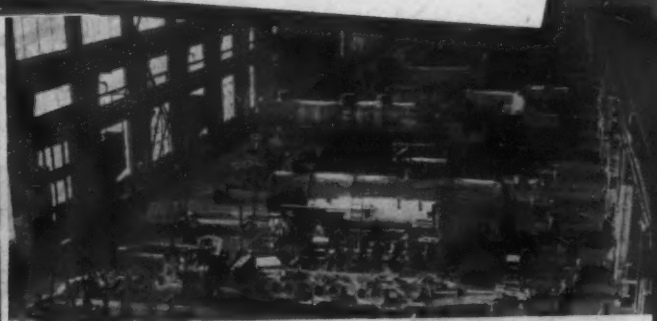
And that, Jim, brings you up to date. Of course, we all miss Mr. Beven, who died in January, but we're proud that his last year as president was such a fine one. The last time I saw him, he asked to be remembered to you. No president was more sincerely interested in the members of his railroad family. That's the kind of president all of us have learned to expect on our railroad.

Sincerely,

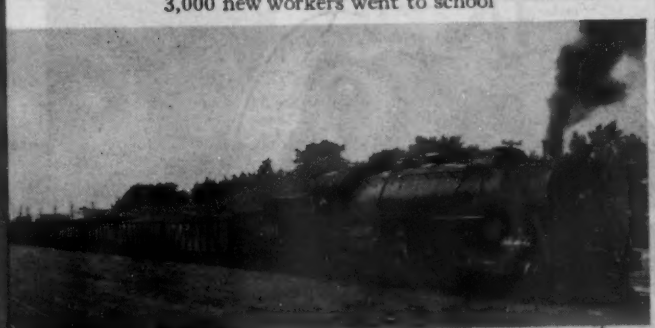
Dad



3,000 new workers went to school



New 275-lb. pressure locomotive boilers



We hauled more coal than ever before



We are working to reduce crossing accidents

..... 6,600 Miles of Strategic Railroad .....



UNITING WEST and EAST in WAR and PEACE



● Speeding the flow of freight between West and East is one of the railroads' biggest wartime jobs.

To shippers East and West, the Illinois Central's *Western Lines* offer advantageous connections and through schedules, efficient service and equal rates.

The Illinois Central Traffic Department is organized to provide effective service to meet the urgent wartime needs of shippers and travelers.

THROUGH SCHEDULES WEST AND EAST



ILLINOIS CENTRAL SYSTEM

Central Artery of the Nation

..... 6,600 MILES OF STRATEGIC RAILROAD .....

Main Line

Southwest



St. Louis Southwestern Railway Lines

1600 Miles of



Tremendous 5,400 horsepower Diesel-electric locomotives make streamlined service to train-load shipments of heavy commodities a daily occurrence on the Cotton Belt.

16,700,000 net tons of freight—a lot of freight any way you look at it. Yet, that is what the Cotton Belt carried during 1944. More freight per mile of road than handled by any other major southwestern carrier. The continuing dependability of Cotton Belt service has earned it the reputation among shippers of "Main Line Southwest."

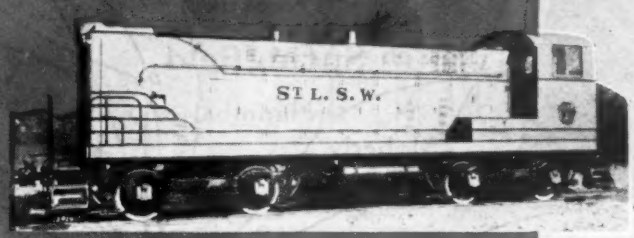
COTTON BELT ROUTE

Congested Mississippi River Crossings at



Modern Railroad

The Cotton Belt Has What It Takes For MAIN LINE SERVICE SOUTHWEST







1. Smooth, powerful Diesel-electric switchers perform prompt switching at important terminals, reducing time in terminals to a minimum.

2. Efficient, light steam locomotives furnish smaller communities on the "Main Line Southwest" with dependable local carload service.

3. Modern shops build freight cars specially designed to meet the specific needs of southwestern shippers.

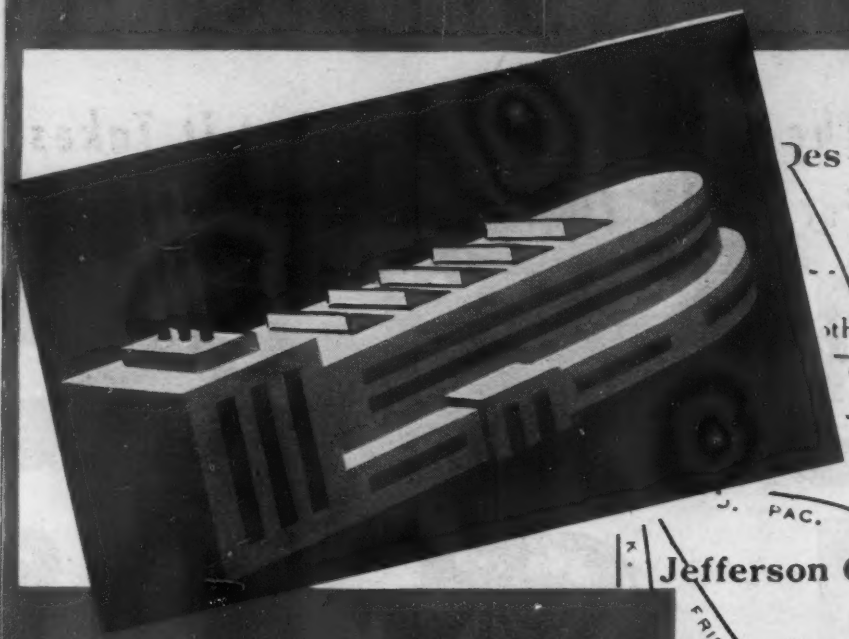
4. Modern high-capacity steam locomotives rush perishables to market.



Large Terminals Are Bypassed By Using The Great Thebes Bridge.



Locate Your Plant on the *MAIN LINE SOUTHWEST*



A plant location on Cotton Belt rails assures main line service for your in and outbound shipments between the Southwest and all parts of the North American continent. Abundant mineral, fuel, power, and agricultural resources, and an ample supply of native labor make a plant location in the Southwest a "must" in your plans for the future. For survey and information concerning plant sites, write or wire—

C. C. Rockenback,
Industrial Commissioner,
St. Louis Southwestern Railway Lines,
Cotton Belt Building,
St. Louis 2, Missouri

GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC



GREAT NORTHERN'S IRON ORE HAUL IS "SPECIAL DELIVERY" OPERATION

Precision Handling, Efficient Equipment Speed Flow from Mines to Docks

For nearly eight months of every year—from April through late November—Great Northern transports iron ore from Minnesota's sprawling mines to the railway's docks on Lake Superior. More than 23½ million long tons in 1944; and at least that much this year!

Moving mountains of Victory-vital iron ore is a "*Special Delivery*" assignment, requiring operating skill and efficient use of equipment. When the shipping season is on, Great Northern has in service 7,300 ore cars and a fleet of super-husky locomotives—power built for heavy duty.

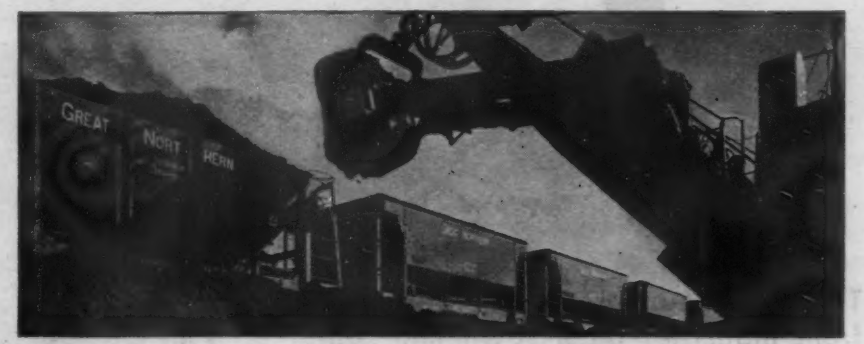
In addition, the railway maintains two vast yards. Trainloads of ore are assembled in one; in the other loaded cars are weighed "on the move" and classified as to types of ore before delivery to the docks.

Great Northern's Allouez docks in Superior, Wis., are the world's largest, and designed to speed the loading of vessels which transport iron ore down the Great Lakes to steel mills.

"*Special Delivery*" handling of iron ore is one of the many things which make Great Northern great.



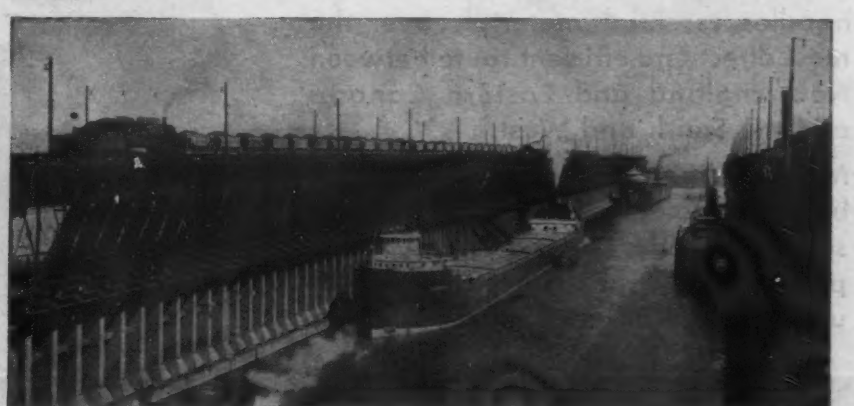
World's largest open pit mine is on the Minnesota iron range. The pit is nearly 4 miles long, over a mile wide and 600 feet deep.



It requires only five "bites" of this giant power shovel to fill a 75-ton G. N. iron ore car.



A section of G. N.'s classification yards where ore trains deliver cars for weighing and sorting according to types of iron ore.



Allouez docks rise 80 feet above water. During the 1944 ore season a total of 2,184 Great Lakes boats were loaded here.

SAFE SWIFT SURE

Perfo

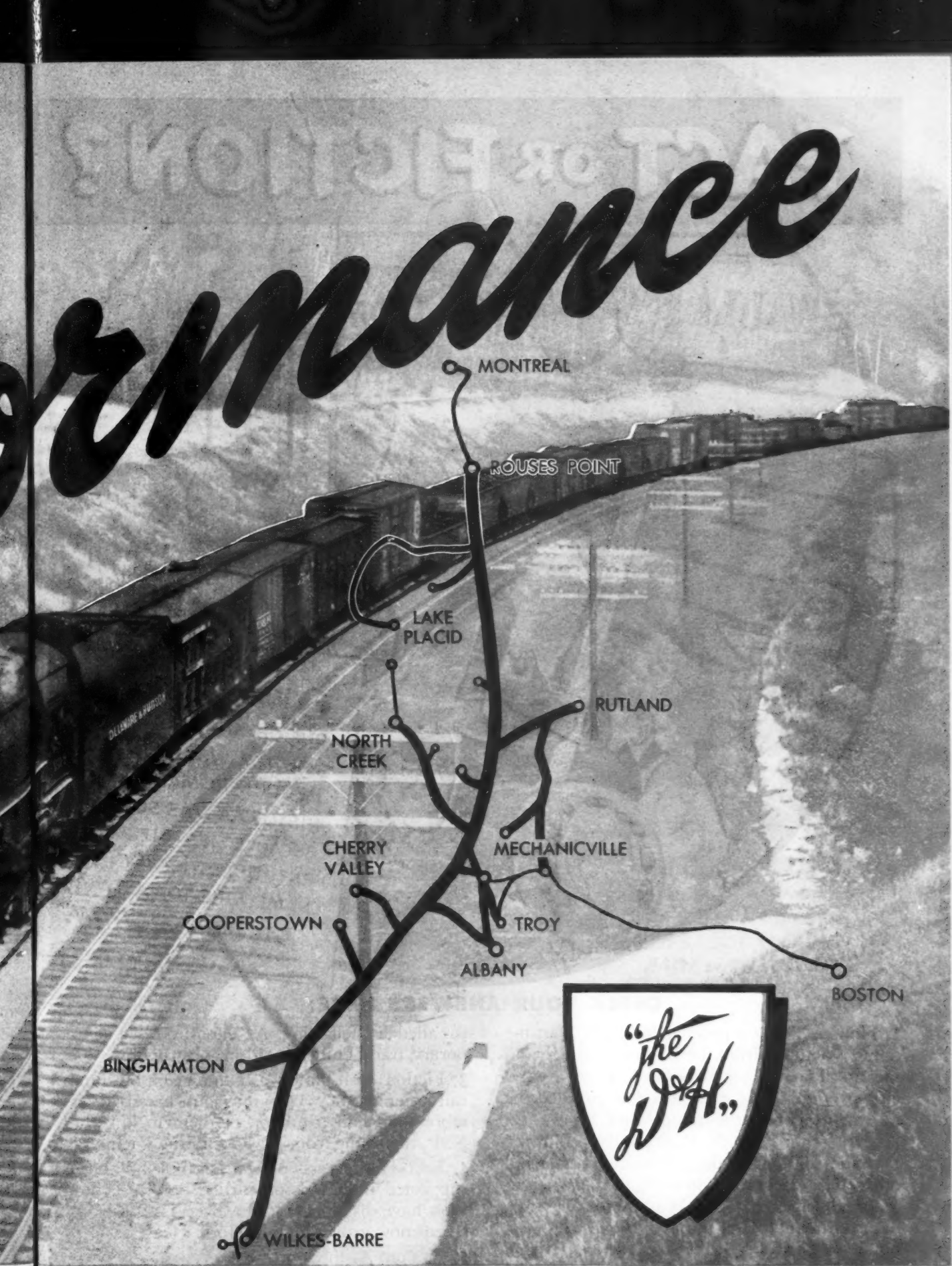


Through its numerous connections, and from industries on its own line, The Delaware and Hudson Railroad handles essential materials over the most direct and efficient route between New England and Eastern Canada and the South and West.

Modern signaling, new locomotives, better track and well organized personnel backed by over a century of experience are your assurance of scheduled performance on this vital line.

THE DELAWARE AND

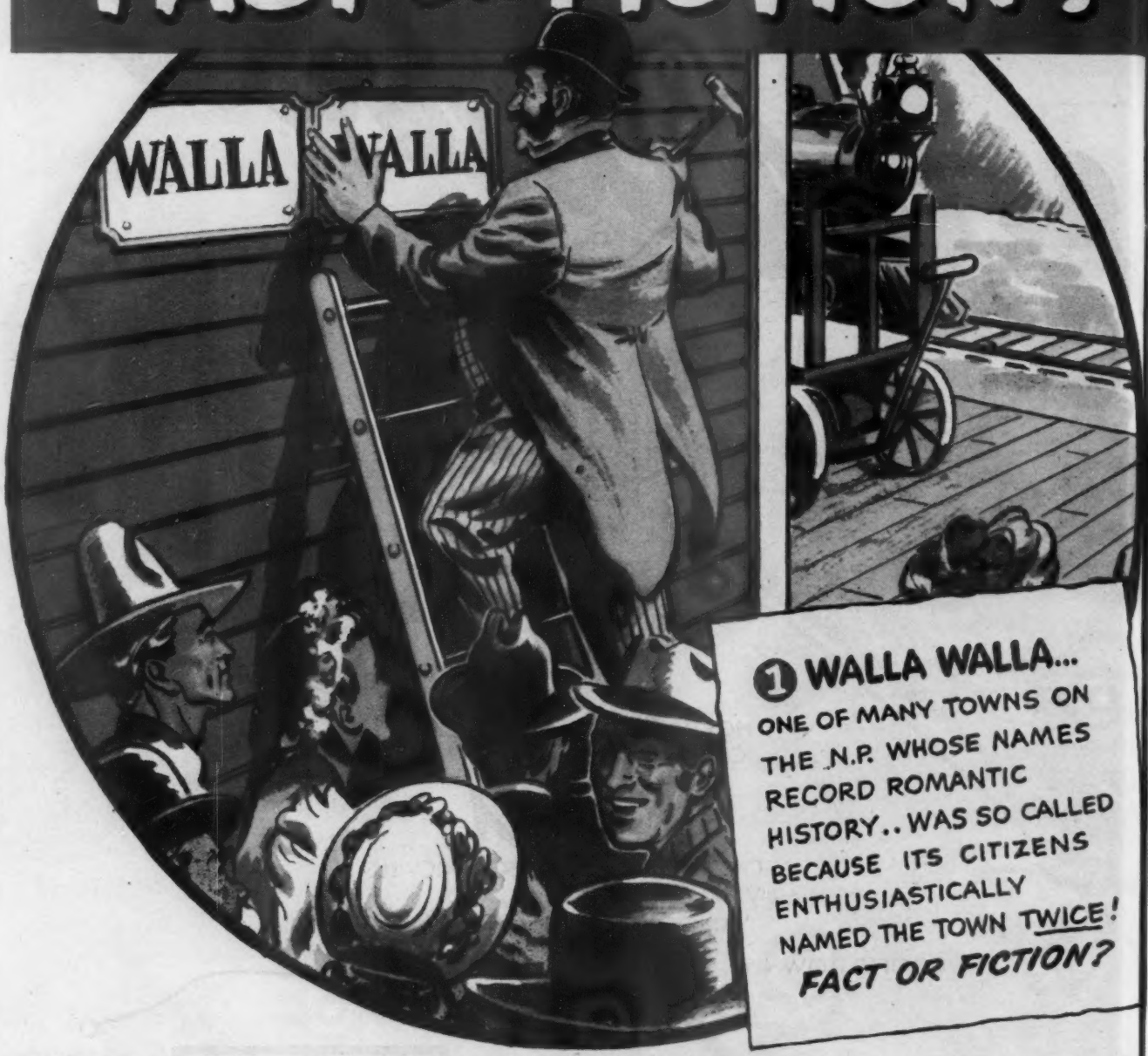
ALBANY, N. Y.



HUDSON RAILROAD

NEW YORK CITY

FACT OR FICTION?



CHECK YOUR ANSWERS HERE:

1. Fiction. That's a popular local joke, but the name is actually from the Indian language and means "flowing water". Some N. P. towns and cities were named for soldiers who guarded the railway's survey parties (e.g. Custer, Miles City) . . . others for early N. P. presidents (Billings, Perham, Villard, Oakes, Hannaford) . . . still others for pioneer railroad workers, their daughters and wives. Eltopia, Washington was first named Eltopai ("Hell-to-pay") because a cloudburst washed out the railroad there, during construction days.

2. Fiction. The fringe, a safety device which warns trainmen on tops of cars to duck instantly, is called a "tell-tale". A "shoo-fly" is a temporary track built around an obstruction.

3. Fiction. Fish plate was name given old-time rail fastening, now known as joint bar. It takes more than half a million of them to link the N. P. main line from St. Paul to the Pacific.

4. Fact. High, grassy plateaus in these hills once supported thousands of spirited horses. Today most have disappeared. However, N. P. carries wheat now grown high in Horse Heaven.

5. Fiction. As the Northwest grew, many of its important population centers flourished on the Northern Pacific—thus, the line has become the "Main Street of the Northwest".

QUICK QUIZ ON NAMES AND NICKNAMES



2 SHOO-FLY IS THE RAILROAD NICKNAME FOR THIS FRINGE WHICH HANGS NEAR TUNNELS AND LOW CLEARANCE BRIDGES. *FACT OR FICTION?*



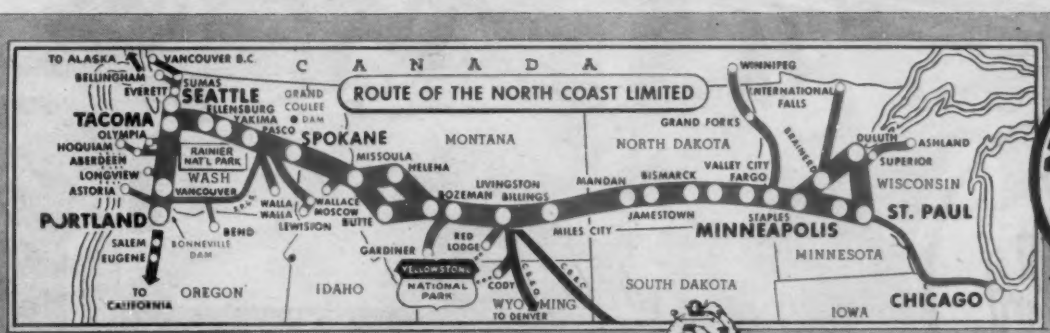
3 FISH PLATE IS TRAINMEN'S SLANG FOR A COLD LUNCH. *FACT OR FICTION?*



4 "HORSE HEAVEN" HILLS IN THE YAKIMA VALLEY GOT THEIR NAME AS A NATURAL PARADISE FOR WILD HORSES. *FACT OR FICTION?*



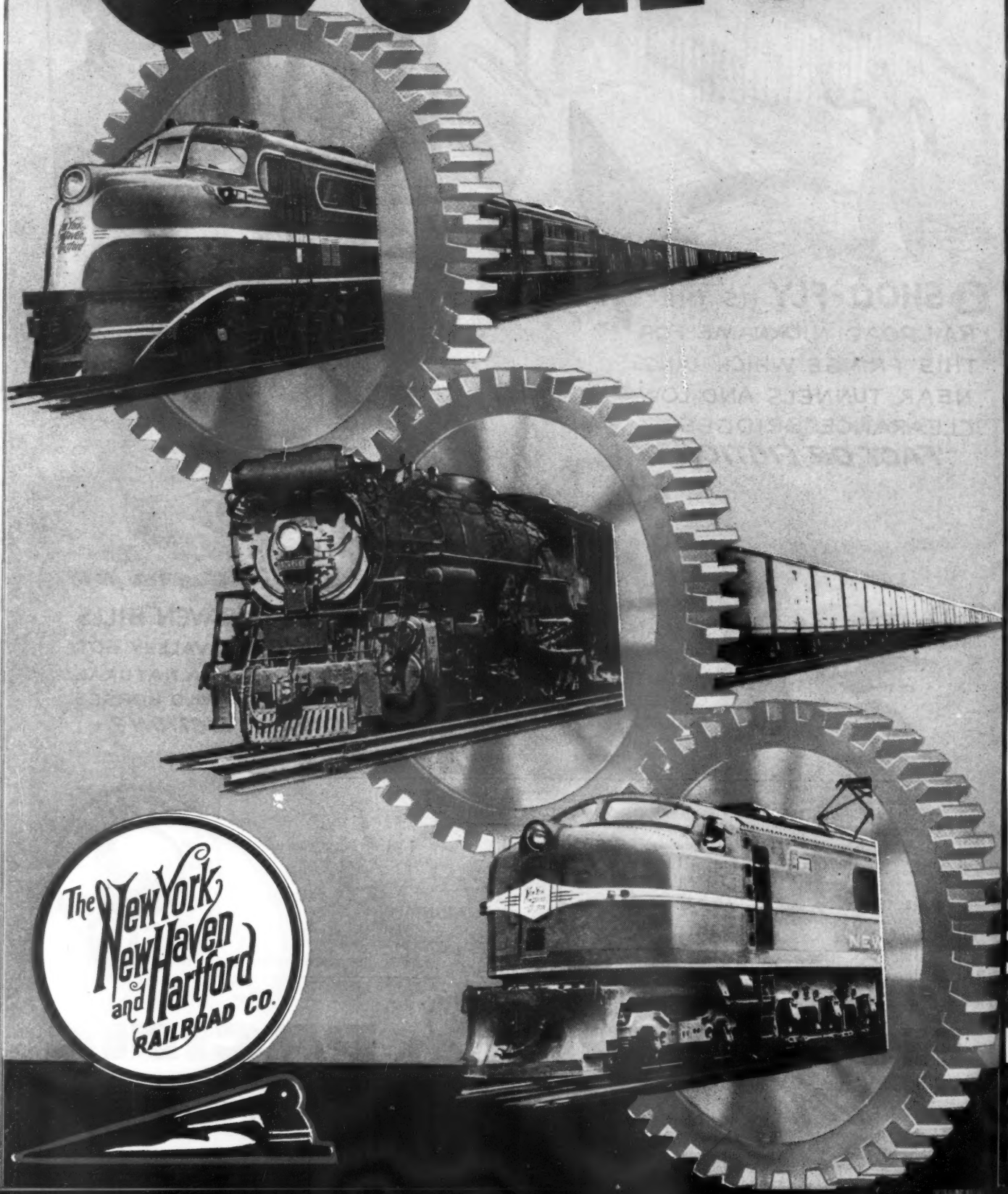
5 "MAIN STREET" NICKNAME FOR N. P. ROUTE WAS FIRST CONCEIVED BY INDIAN SCOUTS. *FACT OR FICTION?*



NORTHERN PACIFIC

Main Street of the Northwest

Geared.



The New York New Haven and Hartford Railroad Co.

. . . to the needs of a Nation at War!

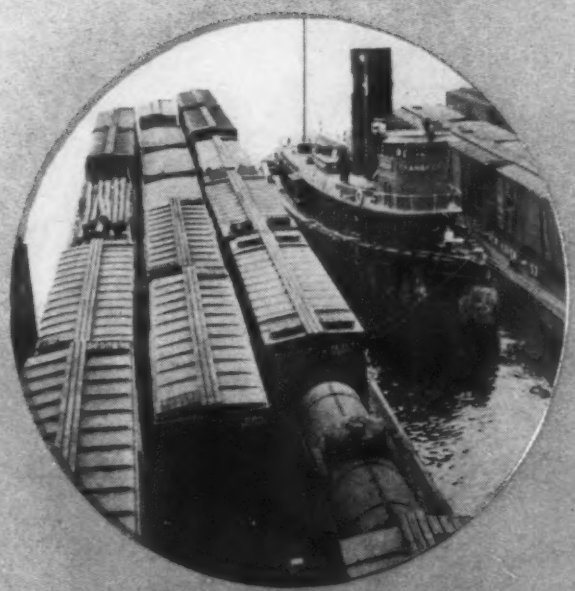
Freight Highlights in 1944 Our Greatest War Year

THROUGHOUT this third high-pressure war year, the New Haven again has echoed night and day with the rumble and roar of long freight and passenger trains.

With 531 road, and 220 switching locomotives, steam, electric and Diesel, the New Haven has operated a daily average of 288 freight and 492 passenger trains.

To serve southern New England, which occupies only 21% of New England's total land area—but contains 80% of its population and 84% of its industrial workers, the New Haven hauled 1,473,138 carloads of freight consisting of the following commodities:

	Carloads		Carloads
Coal and coke	156,296	Beef, packing house and dairy products	33,149
Petroleum and road oils	126,007	Potatoes	28,586
Iron and steel	84,491	Cotton and piece goods	17,088
Grain and products	62,910	Wool	11,901
Lumber and building materials	58,380	Cement	11,045
Fruits and vegetables	47,880	Other commodities	789,514
Paper and newsprint	45,891		



The New Haven's modern fleet of tugs and car floats transported 701,601 freight cars across New York harbor.

In 1944 also, the New Haven carried 65,941,954 passengers in coaches, 2,323,291 in Pullmans, making a total of 68,265,245 passengers handled.

Our shippers and riders contributed their share to the success of this greatest war year by their wholehearted cooperation. Winning complete Victory is still our one main objective. But, the day is not far distant, we hope, when we will be able to provide the kind of postwar rail service that our friends and neighbors of southern New England expect.



Serving New York and the Great Industrial States of Massachusetts, Rhode Island and Connecticut in War and Peace



"Let 'em Roll!"

BY RADIOPHONE from the conductor in the caboose comes a vocal "highball," and another fast freight is on its way over the shortest route between Kansas City and the Gulf.

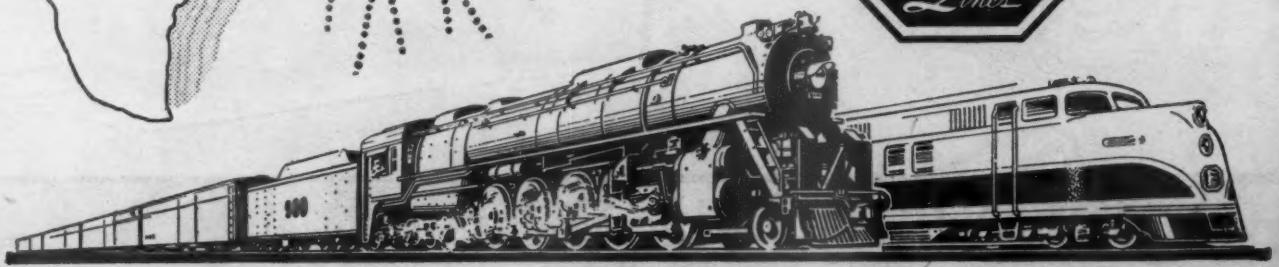
The use of radio on railroads is in its infancy, but Kansas City Southern Lines was one of the first to explore this adaptation of electronics to the movement of trains.

For, besides the advantage of having the shortest route between the "Heart of America" and the five great Gulf ports of New Orleans, Baton Rouge, Lake Charles, Beaumont and Port Arthur, this organization takes pride in adopting improvements that make for safer, speedier, more efficient operation.

Let 'em roll on Kansas City Southern Lines!



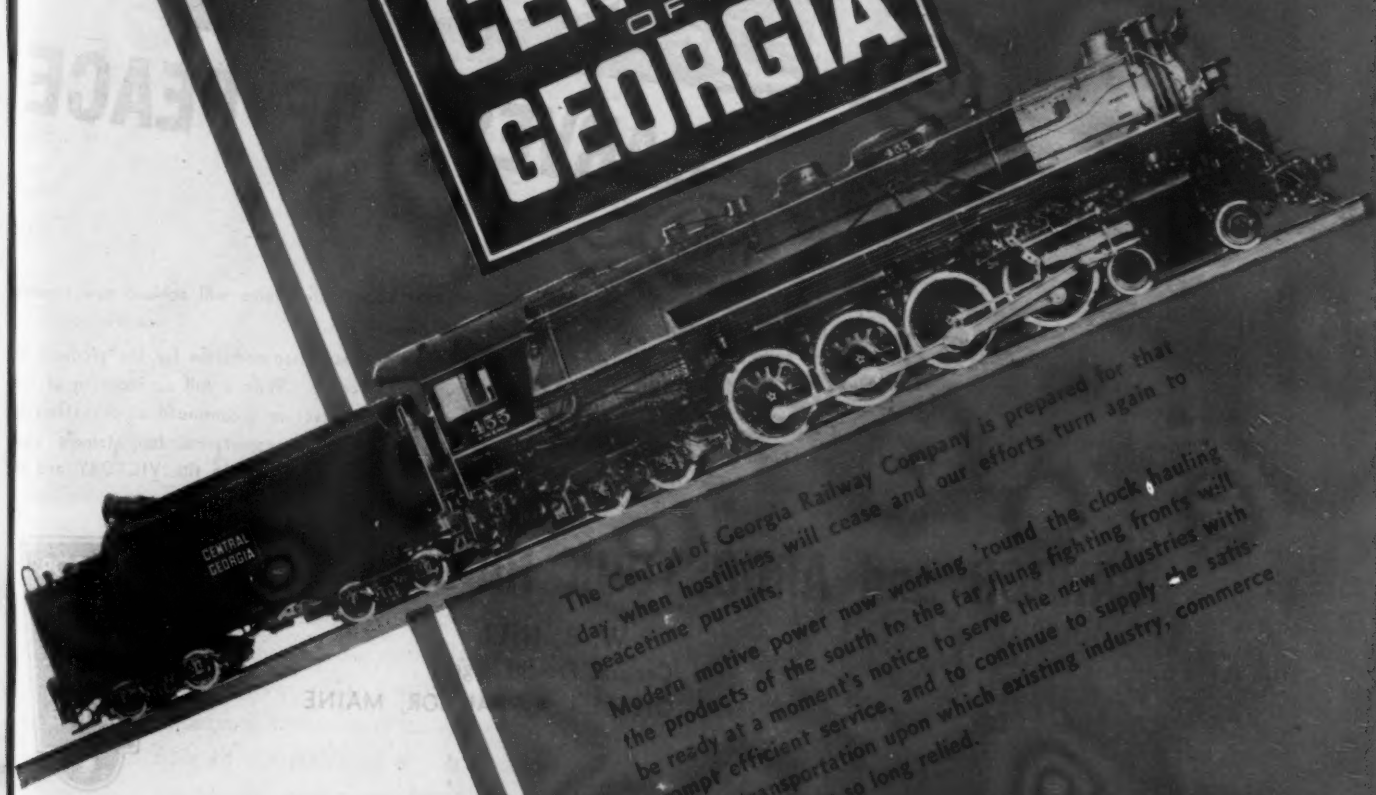
KANSAS CITY SOUTHERN *Lines*



Ready FOR POST-WAR TRAFFIC



CENTRAL OF GEORGIA



The Central of Georgia Railway Company is prepared for that day when hostilities will cease and our efforts turn again to peacetime pursuits.

Modern motive power now working 'round the clock hauling the products of the south to the far flung fighting fronts will be ready at a moment's notice to serve the new industries with prompt efficient service, and to continue to supply the satisfactory transportation upon which existing industry, commerce and business has so long relied.

CENTRAL OF GEORGIA RAILWAY COMPANY

SAVANNAH, GA.

SOWING THE SEEDS OF VICTORY



TO REAP A HARVEST OF PEACE

IN THIS day of phenomenal wartime achievement every resource of our nation is keyed to a high pitch of zeal. The immediate future will not allow for a letdown in effort, but rather, calls for renewed and accelerated performance to meet mounting military and civilian demands.

Once again Maine farmers, manufacturers and timberland operators are called upon to produce all-important food, manufactured products and vital timber in ever increasing quantities for the total war effort. The seeds of production have already been sown and events of the past give evidence that once again Maine will achieve new records to meet our nation's needs.

As a railroad we assure adequate transportation for the products of Maine farms, factories and forests. With a full appreciation of the job to be done we pledge ourselves to a continued all-out effort in providing fast, safe, economical transportation for Maine's vital harvest of wartime products, so essential to the VICTORY and to the PEACE.

BANGOR and AROOSTOOK RAILROAD

W. B. HILL
General Freight Agent
GENERAL OFFICES • BANGOR, MAINE

BANGOR AND AROOSTOOK RAILROAD Serving NORTHERN MAINE



Specify: "SHIP VIA BANGOR and AROOSTOOK R.R." *Fast, Safe, Economical Transportation.*

Meeting history's heaviest demands

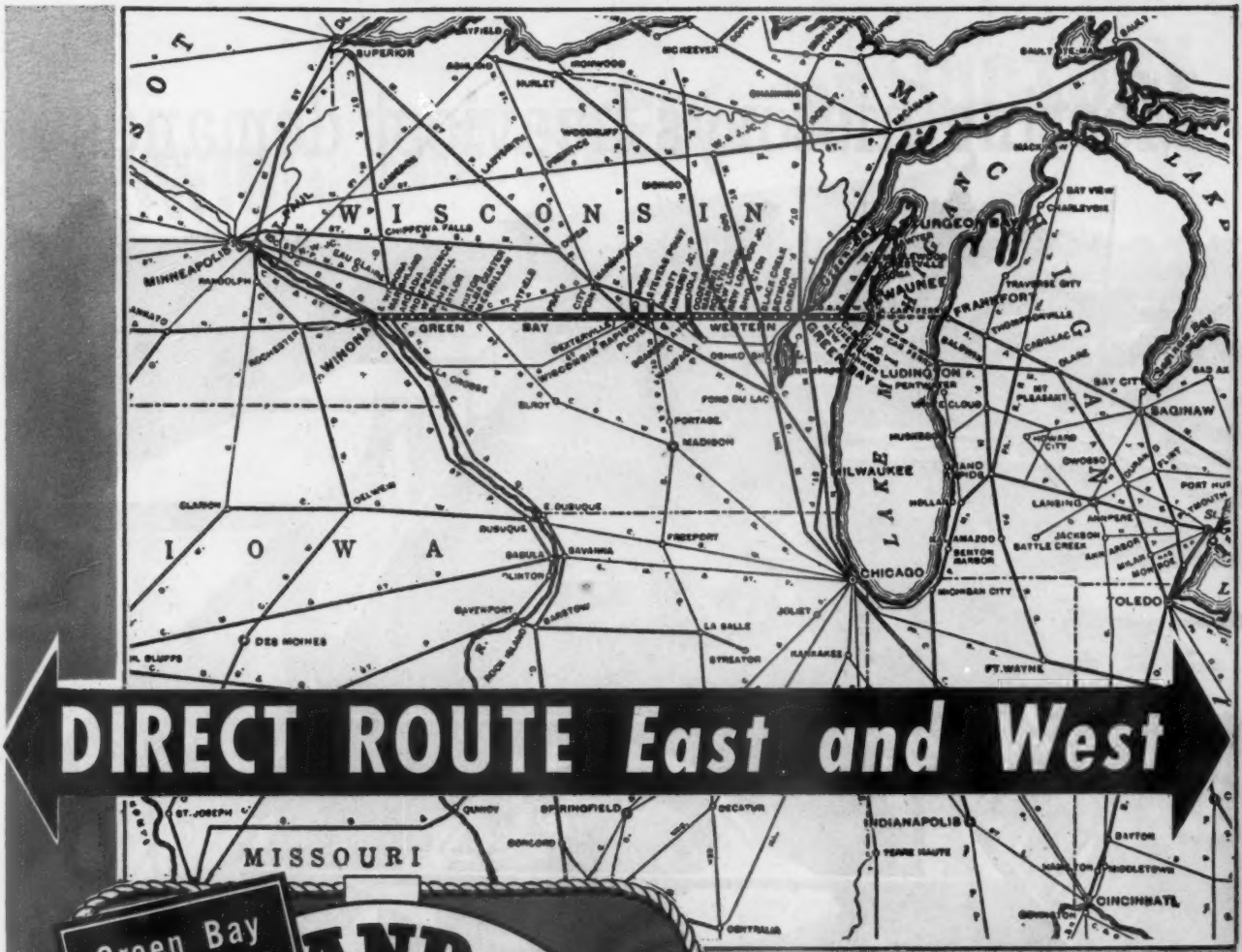


IN 1944, Nickel Plate operations reached a level surpassing even that of the banner year of 1943. War supplies moved in an unceasing stream over its lines. The magnitude of the task was tremendous—yet the job was not only done, but done well.

Much credit for its doing goes to shippers and receivers of freight—whose magnificent co-operation resulted in a successful program of heavier car loadings and more efficient and rapid handling of cars, making available not only more shipping space but more cars.

Such record service as that rendered last year by the Nickel Plate—and by all the American roads—demonstrates once again the indispensability of rails to our economy, not only in time of war but in time of peace, as well. In the reconversion period, a strong and independent railroad system will contribute immeasurably to the prosperous era of peace to which we all look forward.

NICKEL PLATE ROAD



Green Bay Route

GREEN BAY AND WESTERN

More shippers are discovering the time-saving advantages of routing freight via the Green Bay and Western Lines' direct route between East and West.

Fast daily through schedules provide time-saving freight movement between Ann Arbor and Pere Marquette car ferries and all western lines.

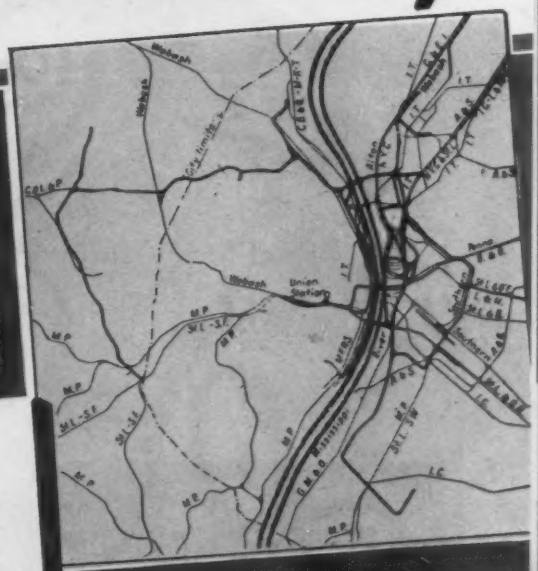
The high level of prosperity created by the unbroken record of agricultural and industrial production in the area served by the Green Bay and Western Lines offers exceptional opportunities for post-war markets. Requests for information as to potential markets and plant sites in this territory will receive prompt and thorough attention. Address inquiries to General Offices, Green Bay, Wisconsin.

Green Bay and Western Lines

T.R.R.A.

Scientific Switching

SAVES HOURS ON FREIGHT INTERCHANGED AT ST. LOUIS



APPLY SAVED HOURS to 3,236,596 freight cars, including 346,492 loaded tank cars of oil . . . hundreds of thousands of cars of war materials . . . 71,744 passenger trains in and out of St. Louis Union Station . . .

And you have the contribution to victory in 1944 made by the Terminal Railroad Association of St. Louis.

It takes scientific switching and timed operation to keep that volume of traffic rolling through St. Louis . . . The Gateway of the Nation!

Trained personnel, ample motive power, direct interchange with all railroads, high capacity freight yards, and two independently owned river crossings, make scientific switching of war traffic a certainty when routed via T.R.R.A.

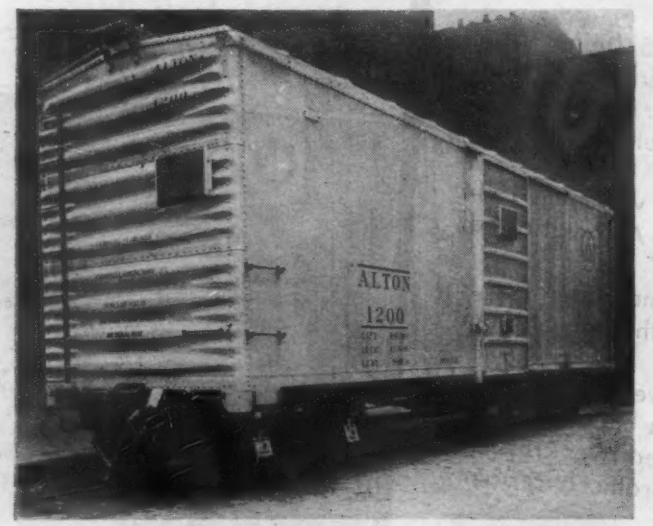
TERMINAL RAILROAD ASSOCIATION of ST. LOUIS



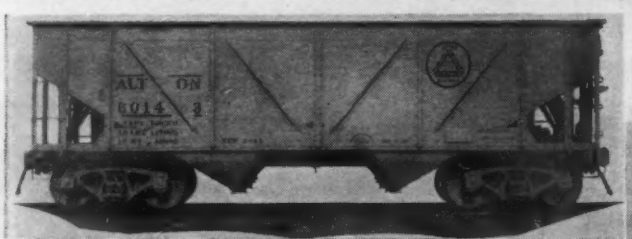


Like the prudent farmer and the efficient manufacturer...









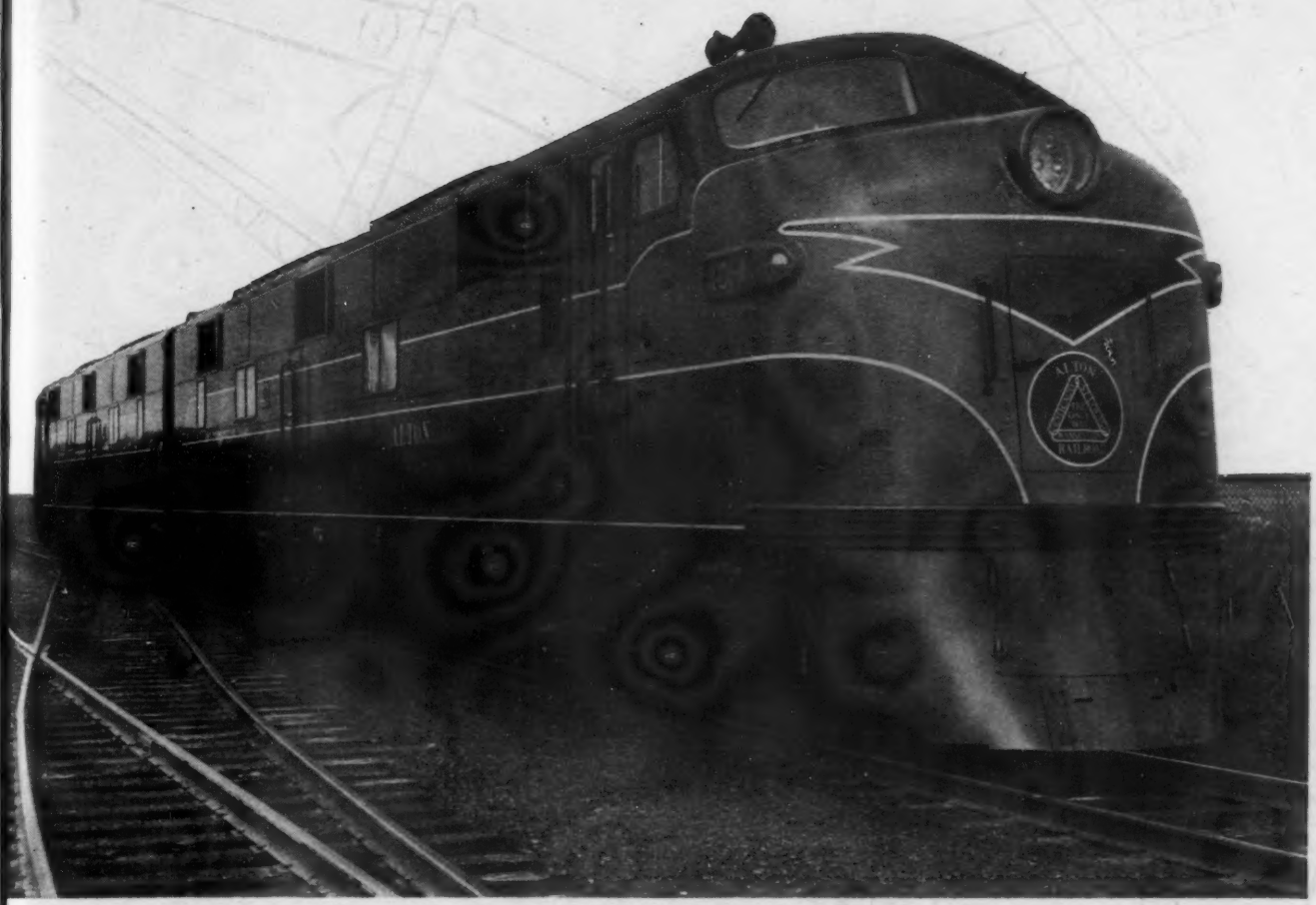
● The prudent farmer puts back into the soil today, through scientific methods, the needed ingredients which will produce bumper crops tomorrow.

Likewise, the efficient manufacturer is constantly on the alert for new ideas and operating procedures. He sees to it that his tools are in top shape, that new machinery is procured so that the most progressive methods are employed in his plant. He must keep ahead of the procession.

So it is on the railroad. The Alton today is not only looking ahead to better methods, new ideas, more effective operating tools—but is doing something about it today.

For example—during the current period, the Alton is receiving ten new aluminum box cars, the first to be made. These have high speed trucks and represent the most advanced type of engineering and design in this field.

At the same time delivery is being made on 1100 new box cars as well as 250 gondolas and 100 hoppers. These augment new equipment received during 1944.



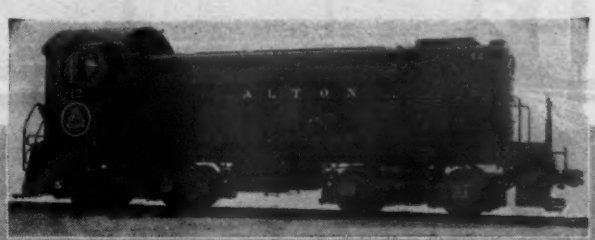
New locomotives include three 4000 horsepower Diesel electrics just placed in passenger service. These release steam locomotives for movement of vital freight shipments. In addition to ten Diesel switchers received during the last year, five more are on order with delivery expected in the near future.

Today we have been carrying the biggest freight volume in our history. Looking ahead we feel confident of our ability to take care of future demands placed upon us not only of essential war traffic, but civilian needs as well.

After hours of regular war assignment we plan for the future when more additions to equipment, when even better methods and materials will be available. Like the prudent farmer and the efficient manufacturer, we are working for today and planning for tomorrow at one and the same time.

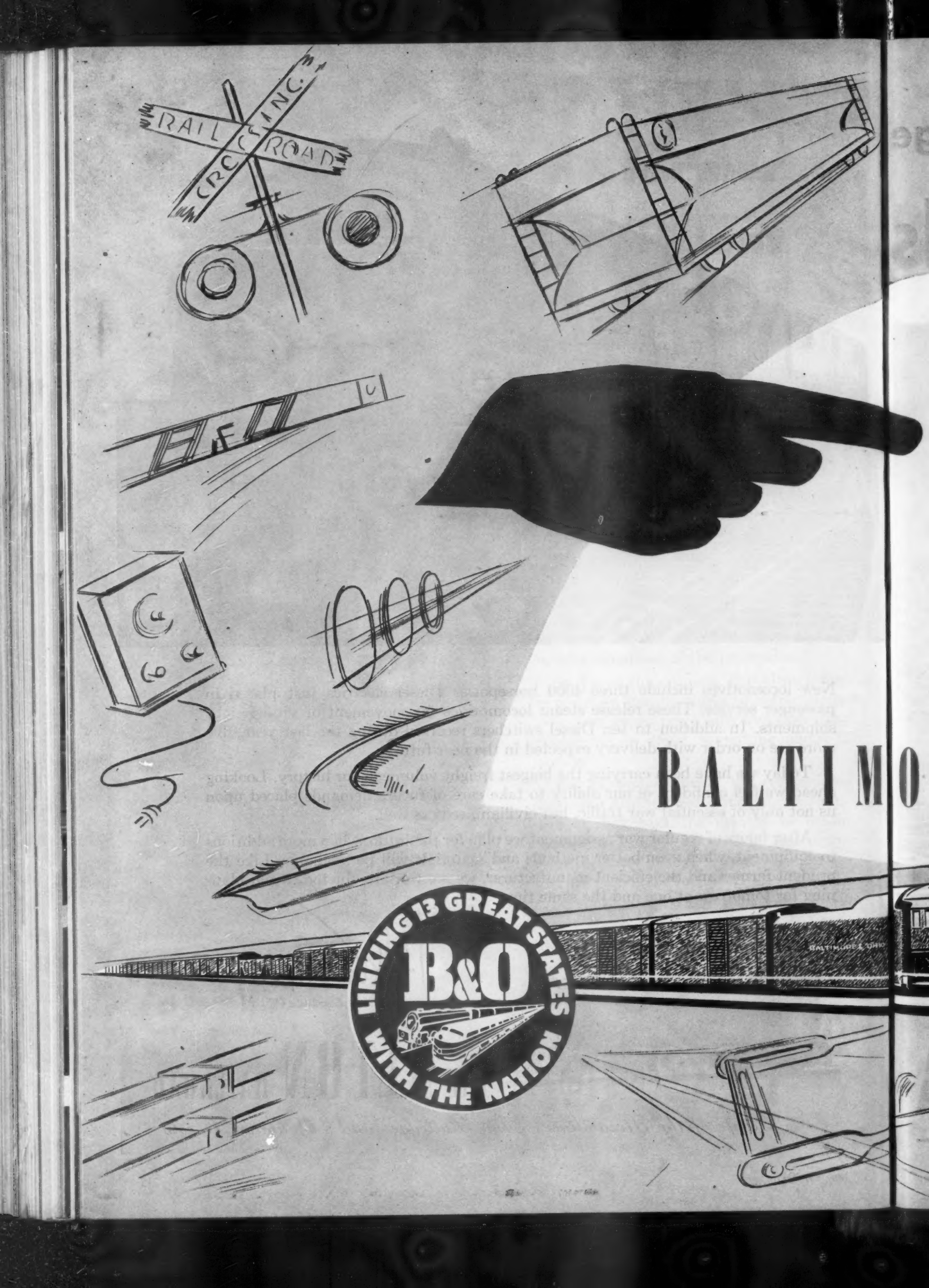
H. B. Voorhees

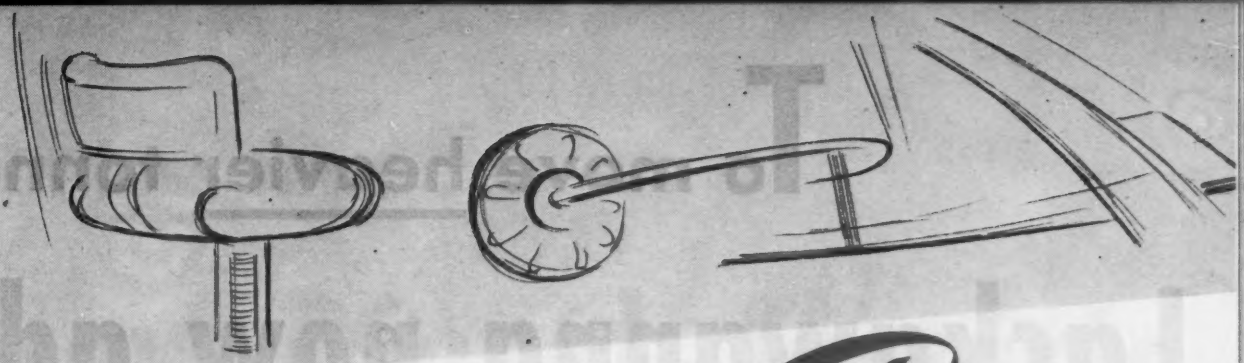
Chief Executive Officer



THE ALTON RAILROAD

Route of the Streamliners "Ann Rutledge" and "Abraham Lincoln"


RAIL
ROAD
CROSSING
BALTIMO
LINKING 13 GREAT STATES
B&O
WITH THE NATION



WHEN A "DOODLE" MEANS *Progress*

AMERICAN HEADS ARE FAIRLY SPINNING WITH PROGRESS-MAKING IDEAS!

On tablecloths, scraps of paper, on designers' drawing boards thousands of "doodles", rough sketches and finished drawings are growing into concrete plans for action.

Throughout the Baltimore & Ohio system—in our shops, roundhouses and offices—many ideas and sketches, to hasten final victory and prepare for the future, are being studied and developed to further improve B&O's service to shippers.

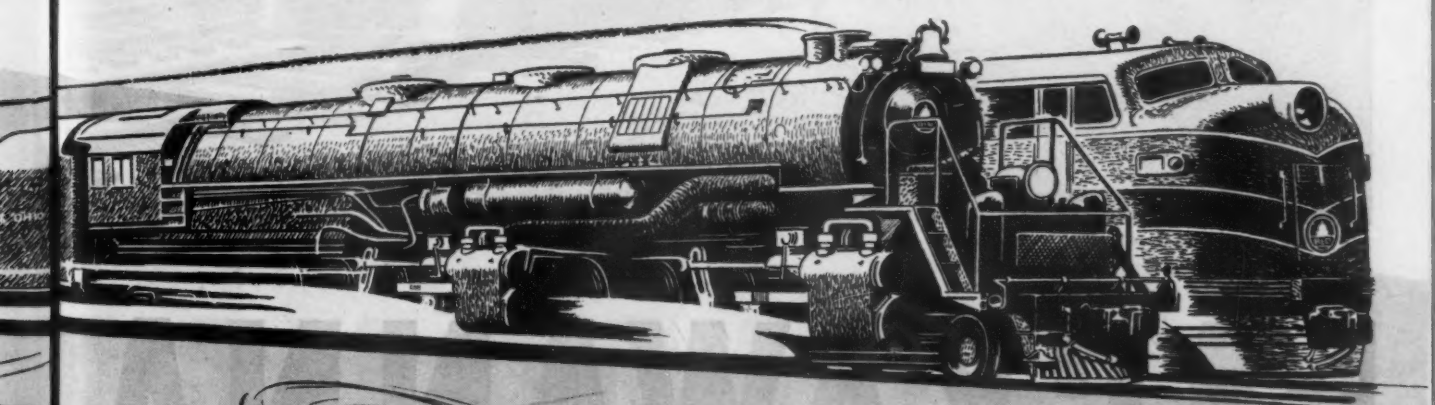
Day-by-day, this type of progressive thinking is helping us meet the heavy demands of war with new devices and procedures that mean faster, safer and more convenient service. Though each improvement now is planned specifically to help speed the winning of the war, great benefits are in the offing when these developments can work exclusively for the peacetime shipper.

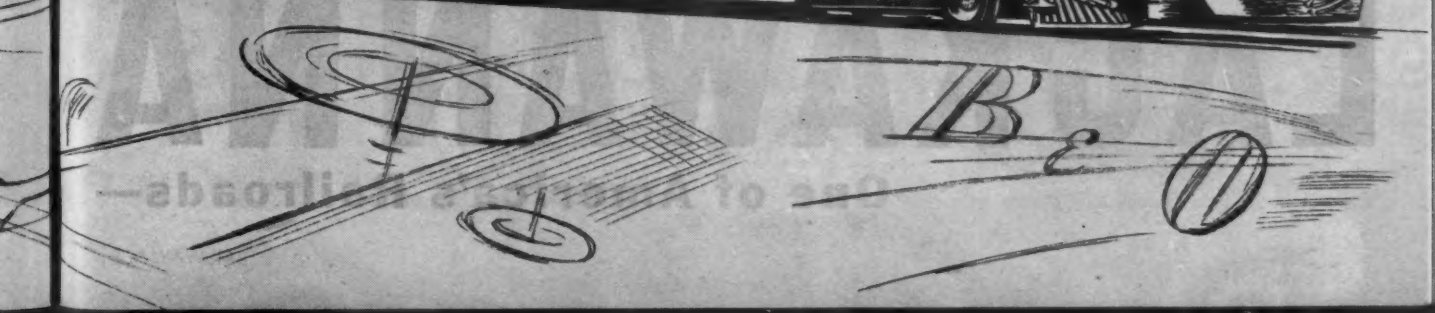
Yes, today more than ever before, with 70,000 B&O men and women a guiding thought is *Progress*..."the science of making things better"... for those who use our system!

R. B. WHITE, *President*

BUY BIGGER BONDS...MORE BONDS...IN THE BIG 7TH WAR LOAN DRIVE

MORE & OHIO RAILROAD





To move heavier tonnage . . .

Lackawanna now adds 8



LACKAWANNA

One of America's Railroads—

. . . in less time . . .

8 new Diesel-Electric Locomotives to its Main Line Freight Service!

In keeping with its traditional policy of always making available to the nation's shippers the most modern equipment and facilities, the Lackawanna Railroad now takes an important step forward with the acquisition of eight great streamlined Diesel locomotives for use exclusively in freight service.

Four of these locomotives, each consisting of three power units with 4,050 horsepower, will operate over the Lackawanna main line, hauling mighty train-loads of freight at a speed up to 65 miles an hour. The other four Diesel-electric locomotives will be used as "helpers" in the Pocono Mountains, east and west of Scranton.

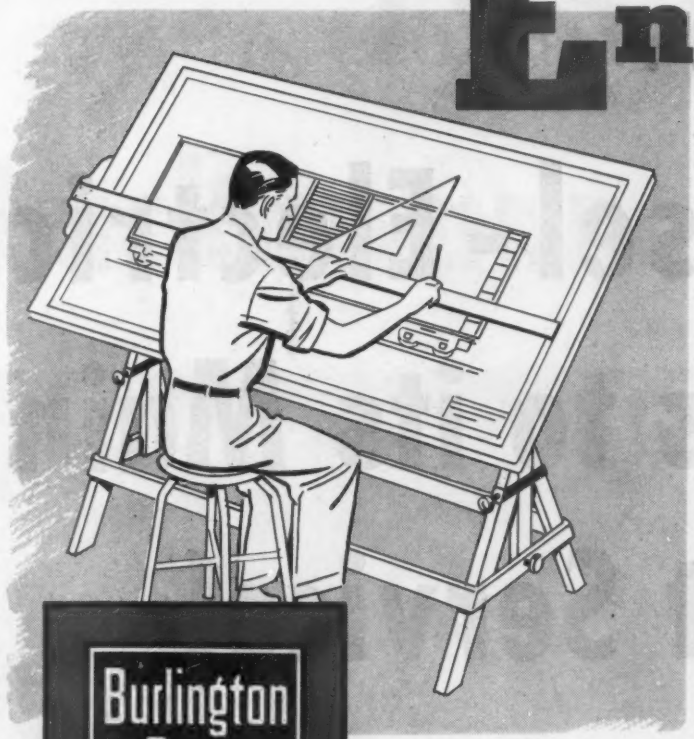
Strengthened for its present job of handling war-time cargoes at greater speed and with greater efficiency, Lackawanna is gearing itself for improved freight transportation in the days ahead, when industrial production is converted from war to a peacetime economy.

RAILROAD



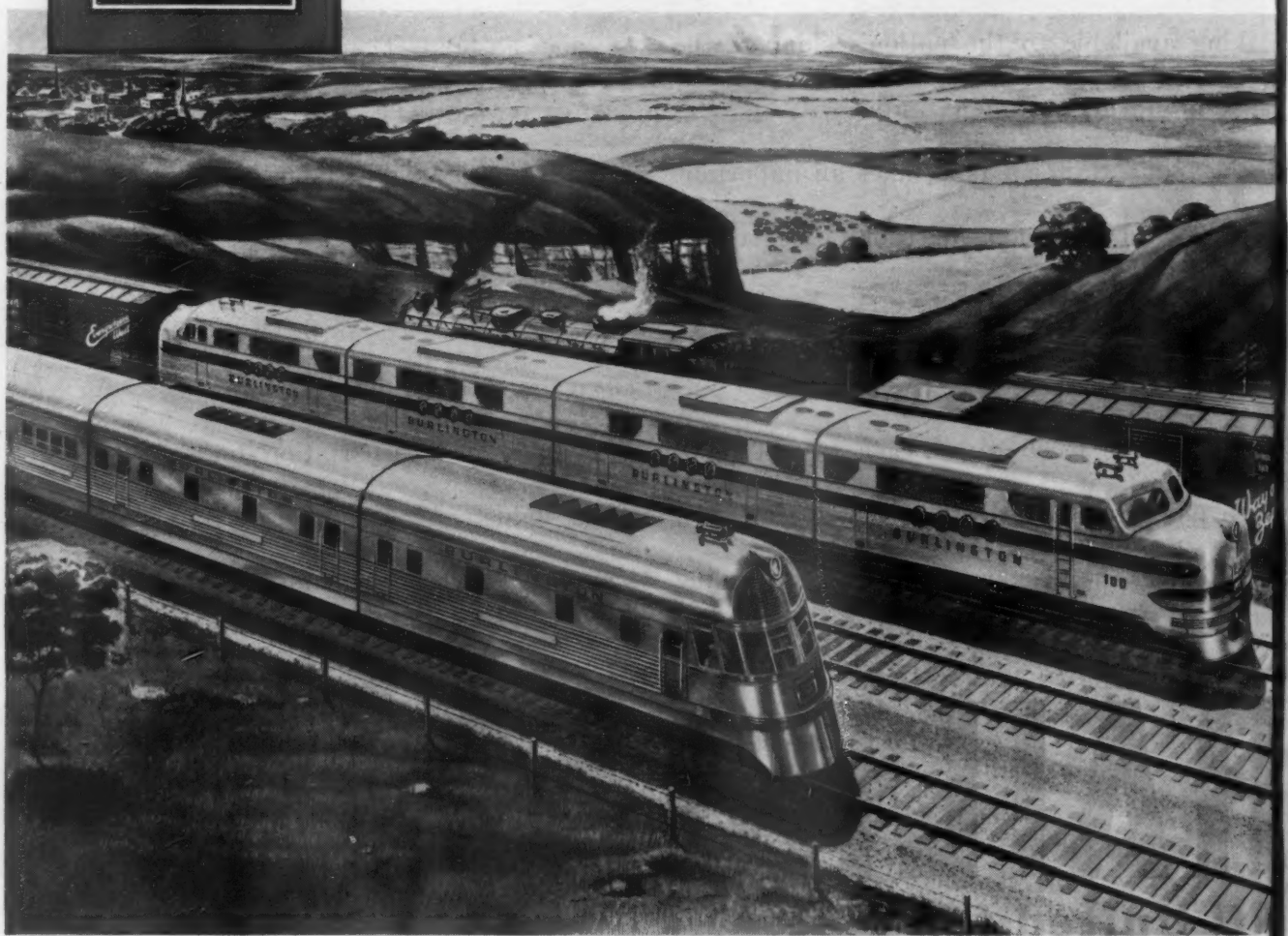
All United for Victory

Engineered



Burlington Route

● You hear a lot about planning these days. Planning new ways to speed Victory—planning for vast postwar improvements. On the Burlington, engineered planning is an old story—a daily task that has achieved magnificent results. It was engineered planning that built the first 12 miles of Burlington Railroad in a little over one year, a tremendous achievement, in 1849 and 1850—engineered planning that built the nation's first railway post office car designed for sorting mail in transit in 1862 and operated it over what is now the Burlington's main line across Missouri. It was this sort of foresight that enabled the Burlington to undertake the handling of the trans-conti-



Planning

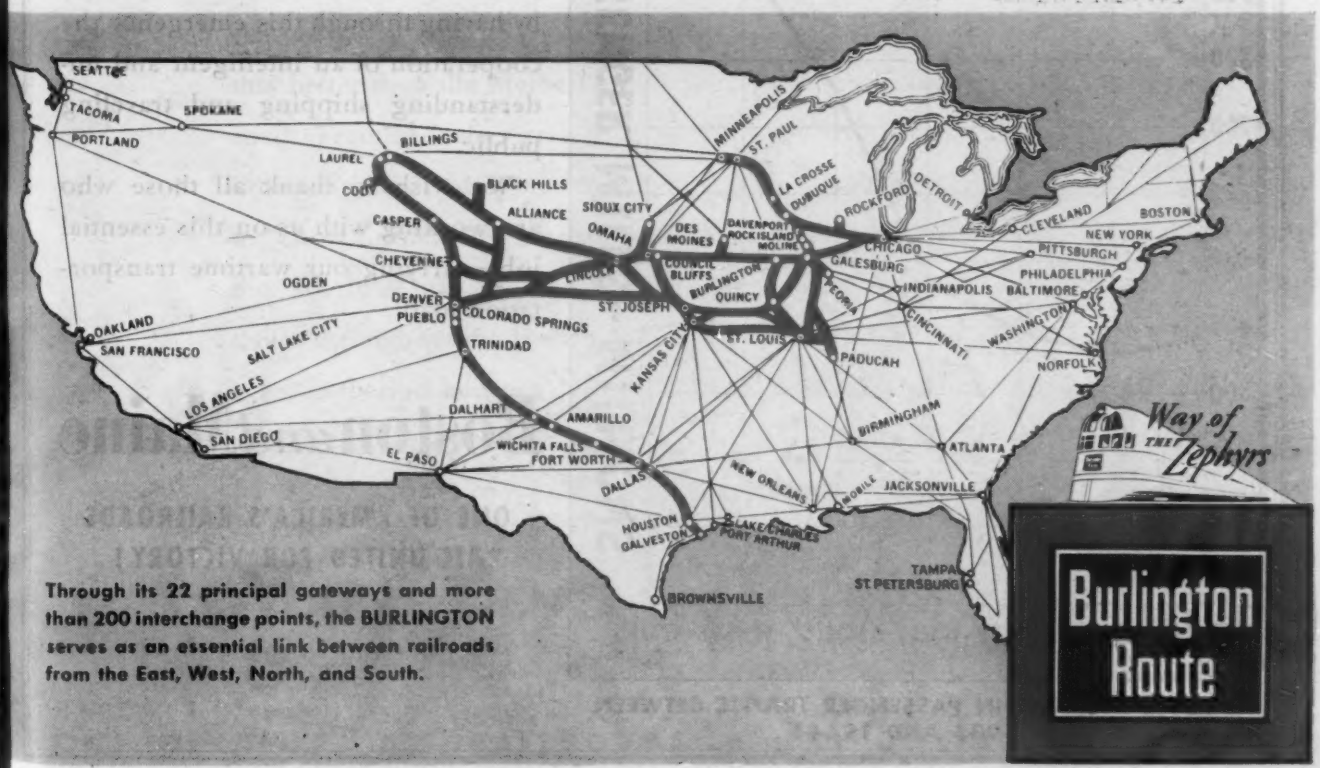
nental mail between Chicago and the Missouri River on one day's notice, in 1884—and has held this movement to Burlington rails from that day.

Engineered planning has made the Burlington a major carrier, between eastern and western railroads, between the Pacific Northwest and the Gulf States—has extended it into many of the major cities of the great Middle West and Southwest—has given it over 200 interchange points with other railroads. Burlington's engineered planning introduced America's first Diesel-powered, streamlined train in 1934, the Pioneer Zephyr, giving America a new era of high-speed railroading.

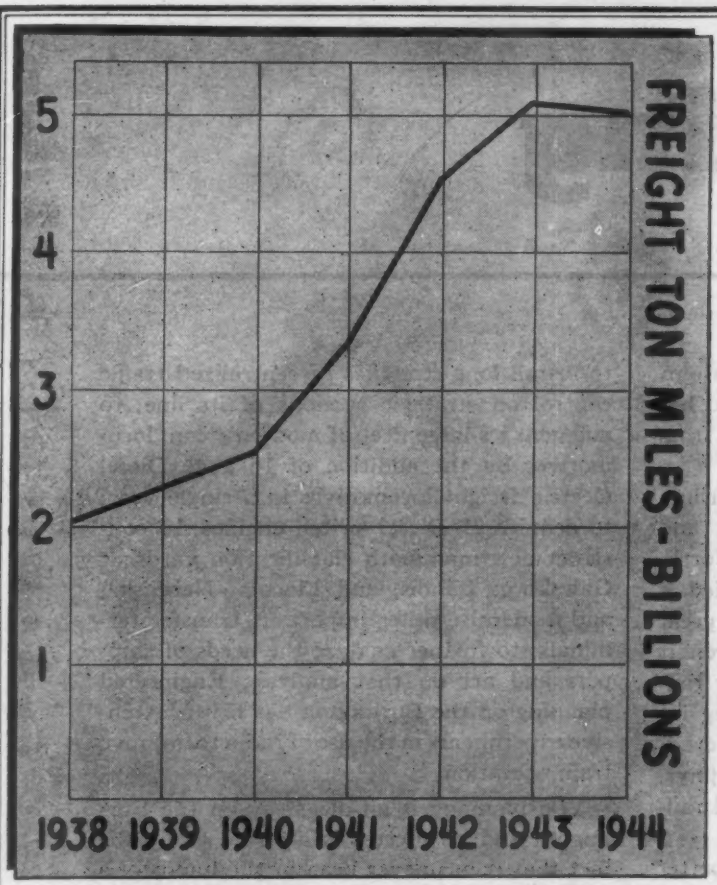
It was this constant searching for better ways to help provide America with the world's best transportation that led the Burlington to install long stretches of centralized traffic control on strategic sections of its line; to augment its large fleet of modern steam locomotives by the addition of 16 huge Diesel electric freight locomotives in a single year; to acquire 71 Diesel switch engines; to construct new mammoth classification yards at Galesburg, Illinois, and Lincoln, Nebraska, and modernize other important transfer terminals; to further analyze the needs of shippers and act on that analysis. Engineered planning on the Burlington has led to extensive experiments in the use of radio to improve train operation.

Yes, planning is an old story on the Burlington and its success is attested to by the fact that it has never been in the hands of a receiver and has paid dividends each year since 1861.

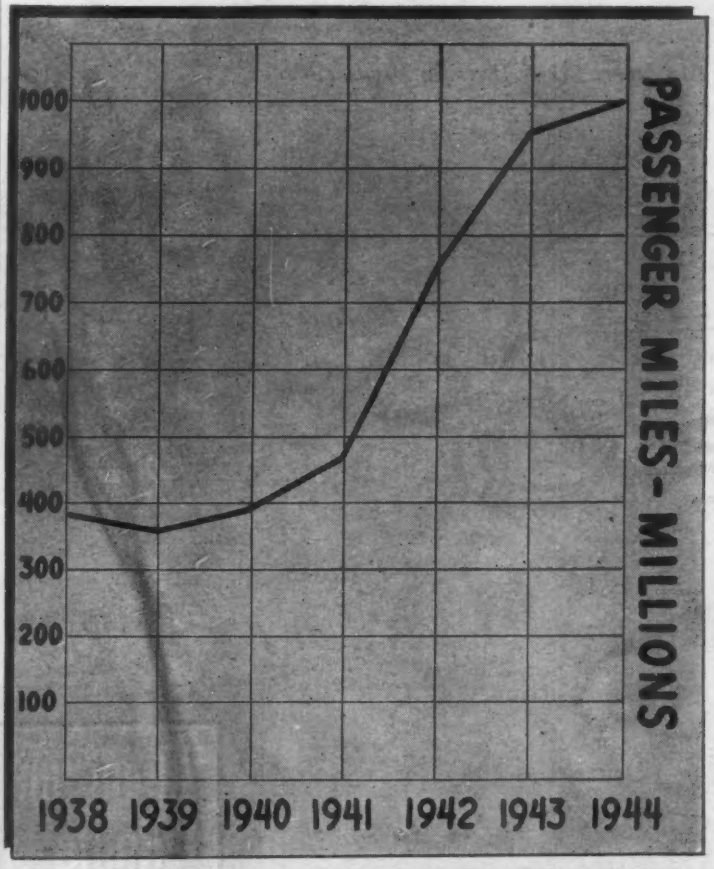
H. L. FORD • *Freight Traffic Manager, 547 W. Jackson Blvd., Chicago*



Through its 22 principal gateways and more than 200 interchange points, the BURLINGTON serves as an essential link between railroads from the East, West, North, and South.



138% INCREASE IN FREIGHT TRAFFIC BETWEEN 1938 AND 1944!



161% INCREASE IN PASSENGER TRAFFIC BETWEEN 1938 AND 1944!

You Helped Us Do This!

These two charts show what has happened to our traffic during the past six years. Although they indicate that the traffic load has more than doubled, this is typical of the transportation job done by the railroad industry during the war.

While some new motive power was delivered to us in 1944, in the main our wartime job has been accomplished with facilities no better than we had at the start and with a steadily declining supply of manpower.

How has this performance been possible? By coordinating our operations with those of other railroads, by receiving competent direction from the Interstate Commerce Commission and from the Office of Defense Transportation, and most important of all, by having through this emergency the cooperation of an intelligent and understanding shipping and traveling public.

We wish to thank all those who are working with us on this essential job—carrying our wartime transportation load!

Boston *and* Maine

ONE OF AMERICA'S RAILROADS
ALL UNITED FOR VICTORY!

MAINE POTATOES ARE SURE GOING PLACES THESE DAYS!



The so-called "humble" potato has no reason to be humble — no one knows this better than the Maine Central Railroad. Trainload after trainload of this indispensable food speeds out of Maine to "chow lines" in the war spots all over the world — not to mention dinner tables throughout the United States.

In the period between January, 1943, and December, 1944, for instance, over 104,798 carloads (2,352,207 tons!) of Maine potatoes were carried over Maine Central lines.

And that's in *addition* to millions of tons of materials and other food stuffs distributed by the Maine Central and necessary for the successful prosecution of the war.

All this has been accomplished without interference with normal traffic.

MAINE CENTRAL RAILROAD

ONE OF AMERICA'S RAILROADS • ALL UNITED FOR VICTORY

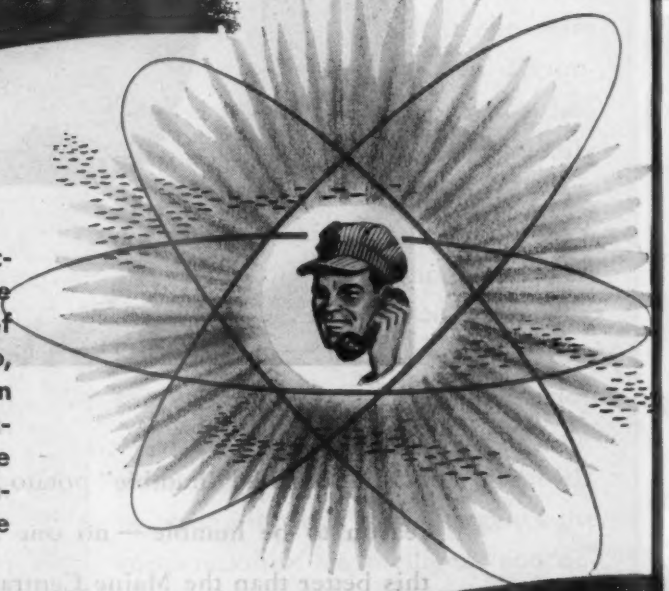
ROCK ISLAND *Keeps Ahead*

Better railroading is the creed on the ROCK ISLAND LINES. It is expressed, made practical and workable, through the famed Program of Planned Progress. Constant improvements, which have to do with the better handling of both freight and passenger traffic, are developed and applied.

The entire Program includes track leveling and straightening at many points, building new bridges, improving tracks and roadbeds. Also included are the latest scientific developments in signalling and communication, and the most modern Diesel and steam power and rolling equipment. Here are three examples:

ELECTRONIC DEVELOPMENT





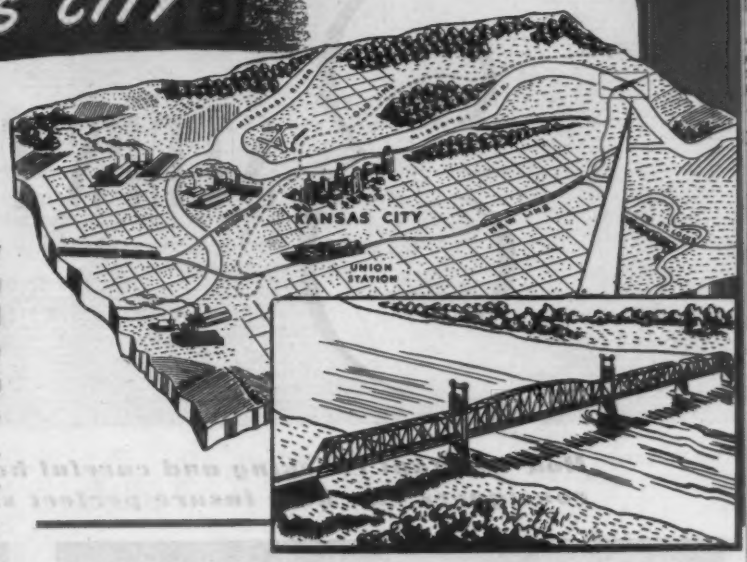
The ROCK ISLAND LINES has its own Electronics Department. Experiments include radio communications, transmission of written messages in facsimile by radio, induction and radio telephone between engine and caboose and between stations and moving trains, portable short wave radios that automatically bridge gaps in storm-damaged communication lines... and micro-wave radar developments.

THE WORLD'S FIRST ALUMINUM BOX CARS



Aluminum box cars are now in service on the ROCK ISLAND LINES. They are made of the same special high tensile aluminum alloy used in B-29 Bombers! "Dead weight" is reduced as much as *4½ tons* per car. A train of 125 aluminum cars would reduce the weight of the train *562½ tons*, with no reduction in the load carried. This innovation promises tremendous and far-reaching post-war development.

NEW TIME SAVING ROUTE THROUGH KANSAS CITY



ROCK ISLAND engineers, constantly studying new ways to improve the service, suggested a new route through Kansas City. This necessitated bridging the Missouri River at a new point. The "turning" of through passenger trains has been eliminated, saving much valuable time for the traveling public, speeding ROCK ISLAND'S service.

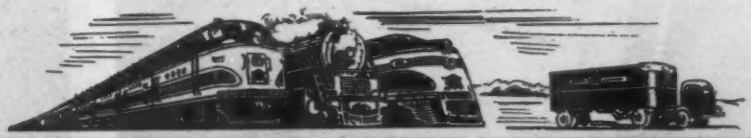
The route will provide a new faster freight line through the city, separate from the passenger line.

ROCK ISLAND LINES

Route of the Rockets

Rock Island

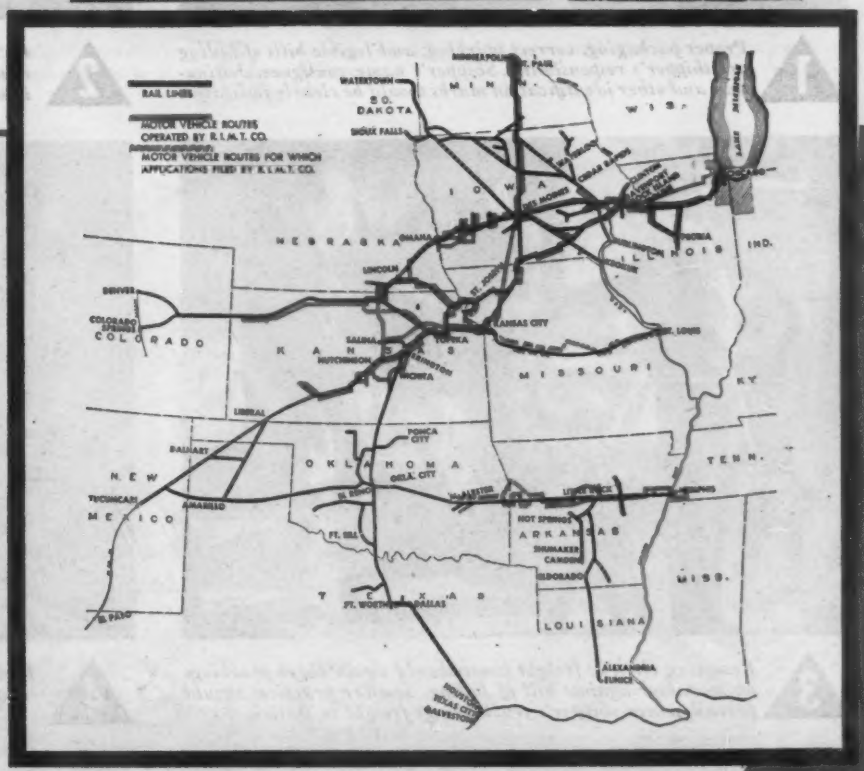
ONE OF AMERICA'S RAILROADS—ALL UNITED FOR VICTORY



SERVING THE MIDDLE WEST

An integral part of America's great transportation network, ROCK ISLAND offers 8,000 miles of modern, well-maintained rail lines serving 14 states. These are supplemented by 3,824 miles of motor transit lines providing pick-up and delivery and door-to-door merchandise service.

INDUSTRIAL DEPARTMENT—the great agricultural and industrial Middle West, and the fast developing Southwest, comprise a land of post-war opportunities. ROCK ISLAND'S Industrial Department can supply you with valuable facts and information about these areas, to help you with your post-war plans. We welcome your inquiries.



8 STEPS TO Perfect Shipping

How constant checking and careful handling by shippers, railroads and consignees can help insure perfect shipping every month of the year.



1 *Proper packaging, correct marking, and legible bills of lading are shipper's responsibility. Shipper's name, consignee, destination, and other identification marks should be clearly indicated.*



2 *Pick up and delivery truck driver should check marking container against bill of lading . . . load shipment carefully into truck.*



3 *Receiving clerk at freight house should again check markings on container against bill of lading. Similar practices should prevail where shipper's truck brings freight to station.*



4 *Freight should be stowed by competent forces. Bulkheads, strapping, and bracing help assure maximum safety in tra*



5 *Bill clerk should correctly transcribe all information on bill of lading to waybill.*



6 *At intermediate points freight should be checked against waybill. At destination freight should be checked against freight bill, correctly prepared from waybill.*



7 *In delivering to consignee or to pick up and delivery truck, freight should again be checked against freight bill and carefully stowed into truck.*



8 *Consignee's representative should closely check packages and billing.*

PROPER care and checking by shippers, railroads and consignees, at each of these 8 steps will result in more perfect shipping every day of the year. Erie heartily endorses the April Perfect Shipping Month sponsored by the Regional Shippers Advisory Boards, and is putting forth every effort to make *every* month a "*perfect shipping month*" for both L. C. L. and carload freight.

The continued progress of Erie will mean even finer transportation for America's shippers.

Erie Railroad

ONE OF AMERICA'S RAILROADS—ALL UNITED FOR VICTORY

ERIE

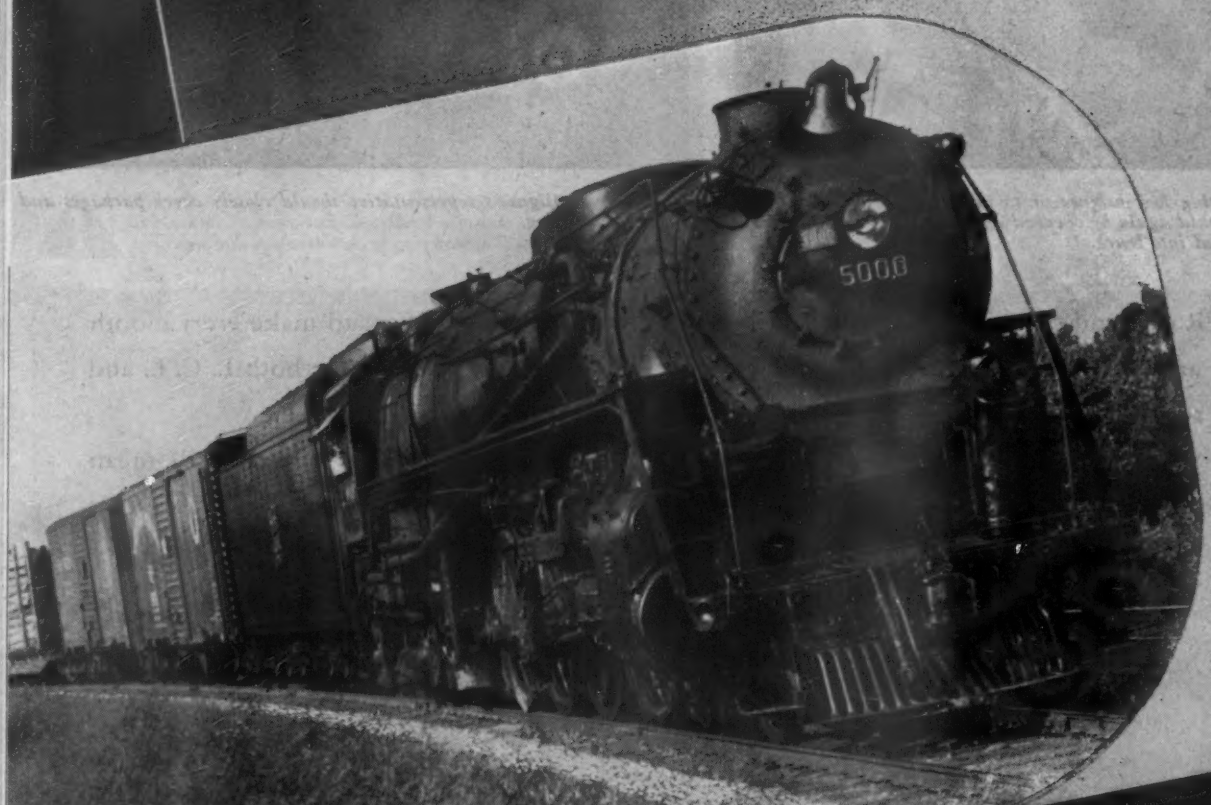


$OO LINE

Basic

IRON ORE, Grain, Flour, Meat, Dairy and Paper products are foremost among the basic commodities which have been so abundantly produced by the Northwest for a World at War. They will also play an important role in the Peace to come because they represent such a vital part of the American Way of Life.

Important also in providing the mass transportation service required



For the

Transportation

for the expeditious marketing of these essential materials is the SOO LINE whose rails virtually honeycomb this productive area.

The "know how" of Soo Line personnel, plus a splendid cooperative spirit extending to Government Agencies and Shippers, has made it possible to perform this basic transportation 365 days a year,—a service which it is our aim to continue for the duration of the war and in the post-war period.

Serving the NORTHWEST and CANADA

NINE **Important Gateways for Intersectional Traffic . . .**
CHICAGO · MILWAUKEE · MANITOWOC · MINNEAPOLIS (MINNESOTA TRANSFER) ST PAUL
DULUTH · SUPERIOR · MANISTIQUE · MACKINAW CITY

THREE **Important Gateways for *International* Traffic . . .**
PORTAL · NOYES · SAULT STE MARIE



SOO LINE

Northwest 365 Days a Year

AN INTERNATIONAL TRANSPORTATION SYSTEM


Switch—
5212
LEHIGH VALLEY

-over

"The Lehigh Valley went to war overnight and it will return to peace-time operation just as quickly. The average citizen will notice little or no difference between the last trainload of war freight and the first trainload of peace-time freight."

PRESIDENT, LEHIGH VALLEY RAILROAD

When the tremendous job of handling wartime transportation was thrust on the American Railroads, the switch-over was made efficiently and speedily. A miracle of transportation was achieved, and every effort is being made to maintain supplies to our fighting forces in the crucial battles that now are being fought.

As peace returns, Lehigh Valley will be ready with a passenger and freight service backed up by 90 years of railroading experience... ready for the switch-over that will give the best in transportation in the history of railroading.

LEHIGH VALLEY

Railroad



ONE OF AMERICA'S RAILROADS...ALL UNITED FOR VICTORY

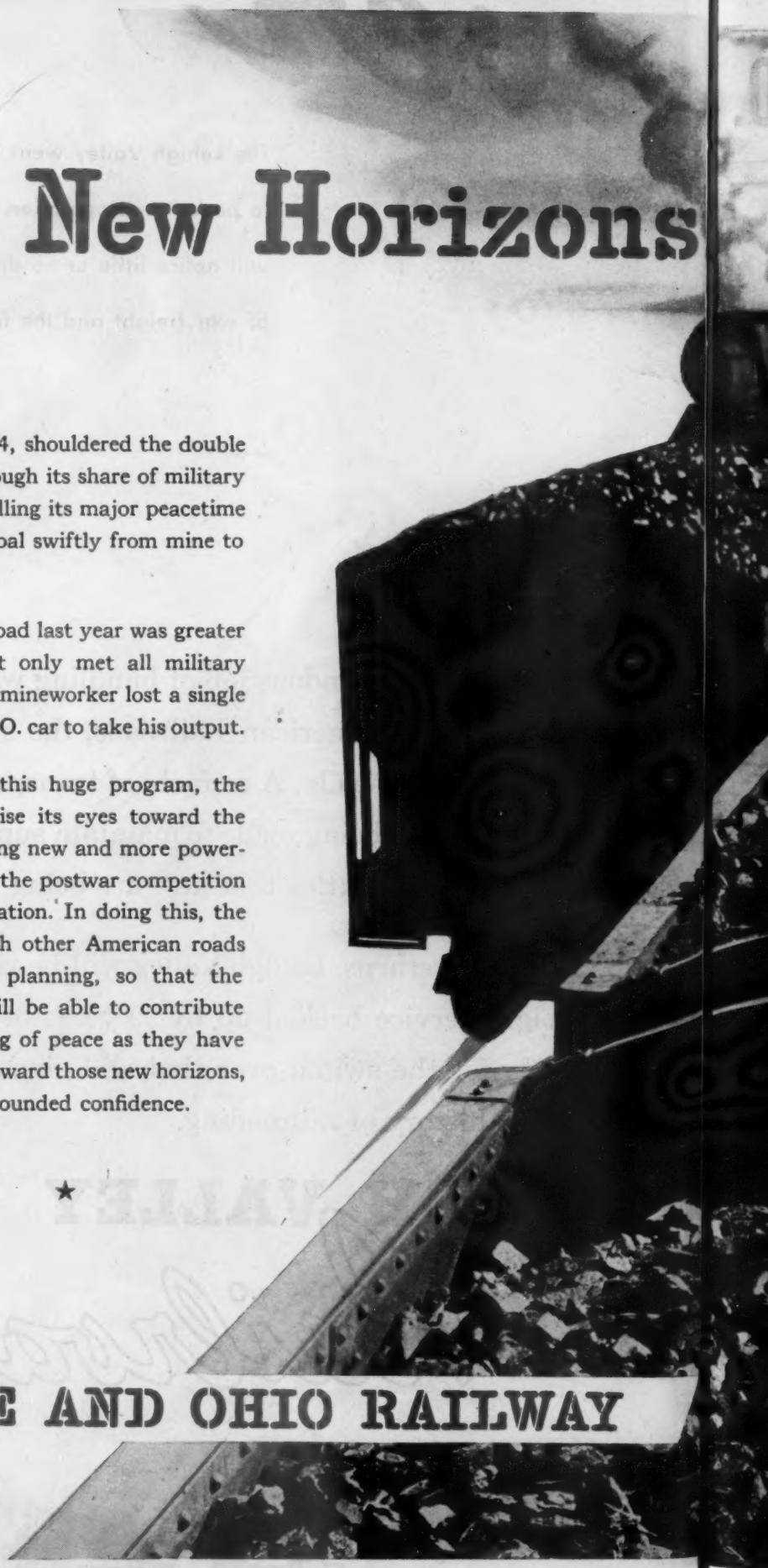
Toward New Horizons

THE C.&O., during 1944, shouldered the double burden of carrying through its share of military traffic on schedule, and fulfilling its major peacetime function—that of moving coal swiftly from mine to destination.

Despite the fact that its load last year was greater than ever, the C. & O. not only met all military needs but saw to it that no mineworker lost a single day's work for lack of a C. & O. car to take his output.

While carrying through this huge program, the C. & O. found time to raise its eyes toward the horizons of peace—developing new and more powerful equipment to help meet the postwar competition of other forms of transportation. In doing this, the C.&O. has co-operated with other American roads in intensive research and planning, so that the railroads of this country will be able to contribute as effectively to the building of peace as they have to the prosecution of war. Toward those new horizons, the C. & O. looks with unbounded confidence.

★ ★ ★



CHESAPEAKE AND OHIO RAILWAY



MISSOURI-KANSAS-TEXAS RAILROAD CO.

The following message—together with financial statement reproduced on page at right—appeared as a paid advertisement in national financial papers and newspapers published throughout the territory served by the Katy Railroad:

The entire physical property of the M-K-T R. R. has been greatly improved under a comprehensive program of rehabilitation. This policy was absolutely necessary to properly maintain road and equipment to handle the tremendous increase in traffic.

The gross revenues and the freight and passenger train traffic reached new all-time highs. Because of our good earnings and a strong cash position throughout the year we have purchased and canceled a large amount of mortgage bonds. A reduction of mortgage debt and fixed charges was vitally necessary to insure solvency of the Company in the postwar period when, we feel, earnings will be substantially less than they have been during the war emergency.

The splendid results outlined here *were attained despite increased problems of management, such as labor and material shortages, mounting taxes, and a wide variety of regulations.*

Rehabilitation expenses in four years have aggregated more than $88,700,000.

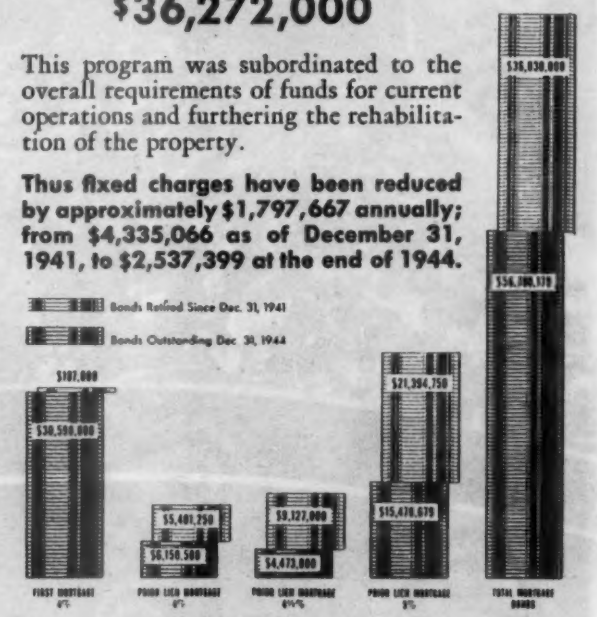
Bond Retirements

The management made marked progress in its debt reduction program started in November, 1942. Through purchase by the Company of its own bonds from that time to February 15, 1945, total bonded indebtedness has been reduced

$36,272,000

This program was subordinated to the overall requirements of funds for current operations and furthering the rehabilitation of the property.

Thus fixed charges have been reduced by approximately $1,797,667 annually; from $4,335,066 as of December 31, 1941, to $2,537,399 at the end of 1944.



ALL of the rehabilitation expenses and the cash to purchase and retire mortgage bonds came from current earnings. To accomplish this it was not necessary to borrow funds and no additions were made to long term debt.

Conscious of the future we have made studies with a view of acquiring such modern passenger car equipment as may be necessary to render high-class satisfactory service to the traveling public and to meet competitive conditions after the war.

The management expresses its thanks to the public for the confidence imposed in us.

CHAIRMAN OF THE BOARD AND PRESIDENT

★ ★ ★ **KATY LINES** ★ ★

ANNUAL REPORT FOR THE YEAR···1944

Facts About Katy Income and Finances

THE OPERATING REVENUES in 1944 topped all previous records in the Company's history. The sources from which these revenues were derived and how the income was used are explained in the following tables:

REVENUES FROM OPERATIONS WERE DERIVED FROM THE FOLLOWING SOURCES:

	1944	Percentage of Change Compared with 1943
Transportation of Freight	$64,057,249	Increase 8.17
Transportation of Passengers	13,918,458	Decrease 1.47
Transportation of Mail, Express and Other Service	6,046,335	Increase 6.44
Making a Total Operating Revenue of	$84,022,042	Increase 6.32
Other Income Was	307,124	Decrease 4.73
Making a Total Income of	$84,329,166	Increase 6.28

HOW INCOME WAS USED

Wages and Salaries Paid Employes (Charged to Expenses)	$33,500,604
Miscellaneous Materials, Rental of Equipment and Facilities, etc.	23,751,632
Taxes	10,542,789
Locomotive Fuel	4,717,274
Depreciation Charge on Rolling Stock and Roadway Structures	2,097,536
	$74,609,835

LEAVING

for Fixed and Contingent Charges	$ 9,719,331

INTEREST

on Mortgages, Conditional Sales Contracts and Other Fixed and Contingent Charges Was	$ 3,609,216

RESULTING

in Net Income after Fixed Charges and Other Deductions	$ 6,110,115

OF WHICH

There Was Appropriated for Possible Increase in Tax Liability and for Other Purposes	2,000,000
Balance of Income Transferred to Earned Surplus	**$ 4,110,115**

KATY LINES

Serving 5

CHICAGO GREAT WESTERN
CORN BELT ROUTE
RAILWAY COMPANY



Power and Performance to

"KEEP 'EM ROLLING"

By virtue of its strategic location and its modern facilities, the Chicago Great Western Railway is prepared to meet demands for added transportation for the Nation's war program and for the ordinary needs of America.

Your nearest Great Western representative is at your service. He has a wealth of information as to how you can use the facilities of this railroad to advantage.

B. R. HARRIS, General Traffic Manager
309 West Jackson Blvd., Chicago, Ill.
Traffic Offices in the Larger Cities

NEBRASKA

CHICAGO GREAT

THE CORN

One of America's Railroads

5 Strategic Gateways



★ CHICAGO

★ COUNCIL BLUFFS
OMAHA

★ ST. PAUL
MINNEAPOLIS
Minnesota Transfer

★ ST. JOSEPH

★ KANSAS CITY

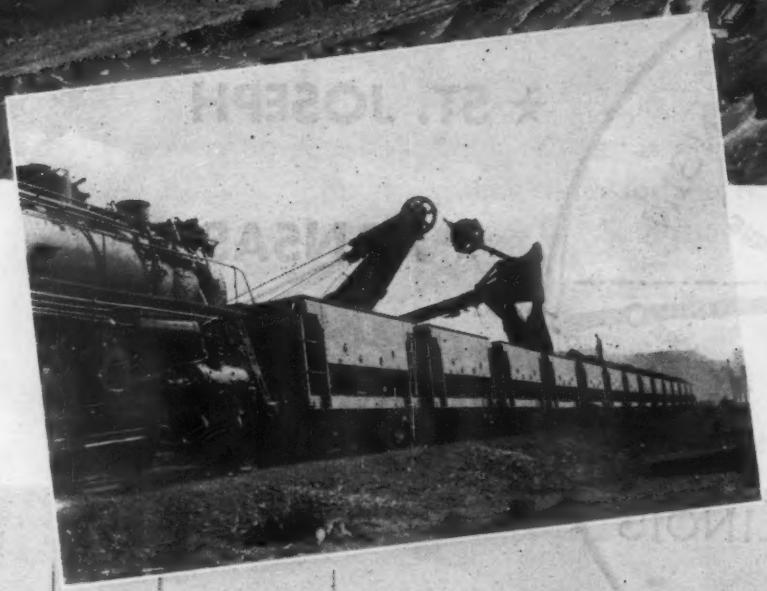


WESTERN RAILWAY

BELT ROUTE

All United for Victory

In the Beginning-



World's Largest Iron Ore Mine at Hibbing, Minn., Served by the Duluth, Missabe and Iron Range



Mountains of Iron Ore

Battle-wagon or luxury liner, tank or automobile, munitions factory or the house of your dreams—

The chances are all of these had their beginning in the mountains of iron ore moved from the Lake Superior region by the Duluth, Missabe and Iron Range.

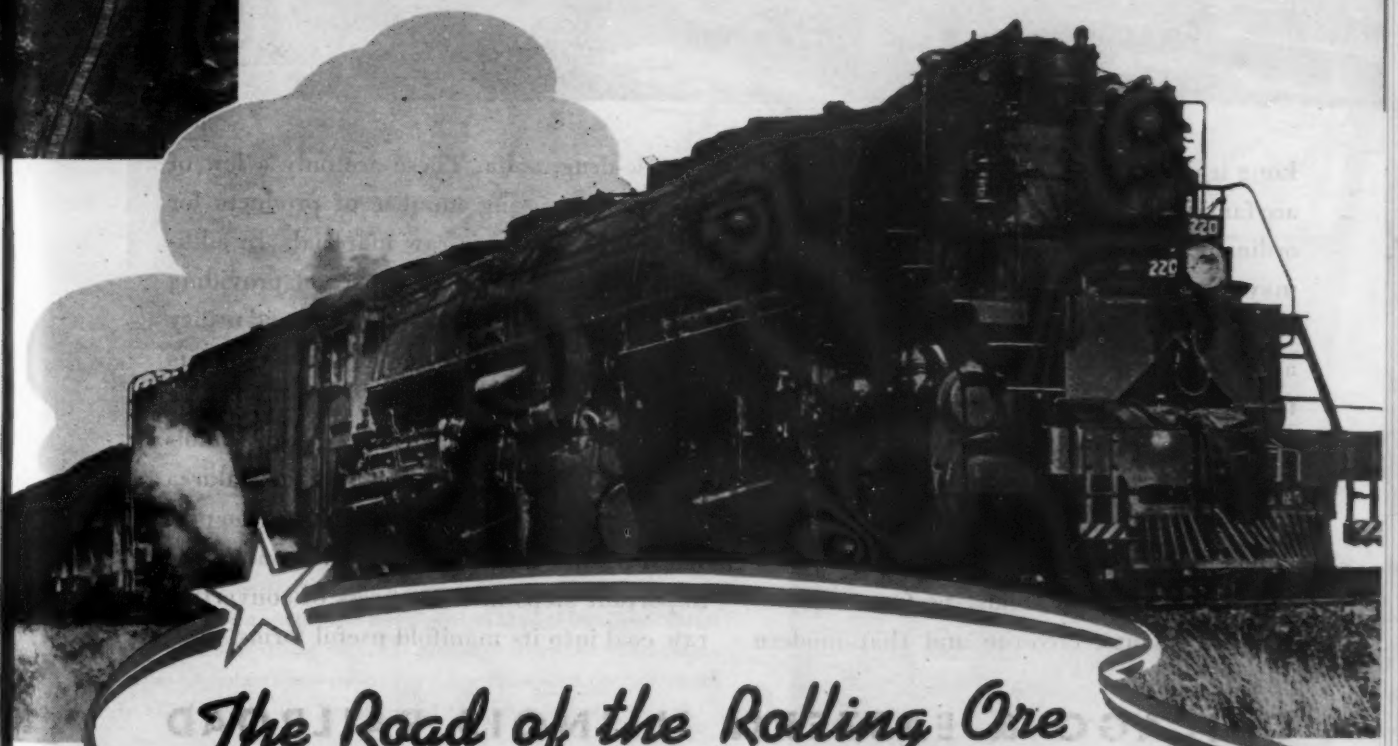
Today, in the Mesabi and Vermillion ranges of Minnesota, iron, the basic raw material of both war and peace, is being produced in record quantities to make the steel required for ships, tanks, guns, and a thousand other items needed for Victory.

Tomorrow, that production will make possible the steel for newer and better luxury liners, automobiles, homes, and all the other things that go to make up the American standard of living.

During the past three years 129,072,363 gross tons of iron ore have been transported over our rails. This represents fifty per cent of all ore moved from the Lake Superior District in the same period.

The fine safety records previously established on this property have been maintained notwithstanding the tremendously increased volume of traffic.

Thru both the war and the victorious peace that is to follow, we will continue to keep the long trains of vital iron ore rolling down the strong connecting link between mines and mills.



The Road of the Rolling Ore

DULUTH, MISSABE & IRON RANGE RAILWAY

Coal In Transit . . .

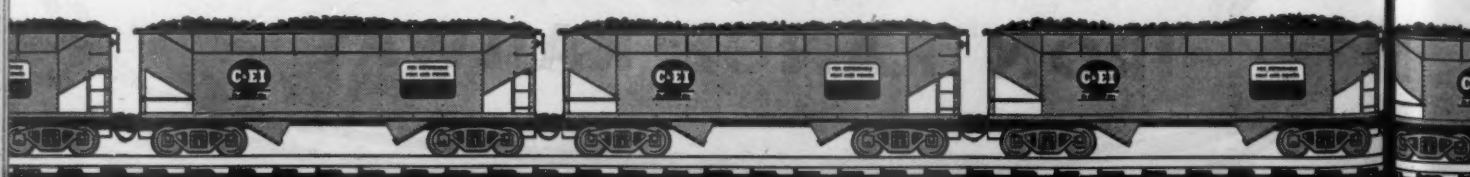


Long trains of open-top cars loaded with coal are familiar sights; but few people realize that ordinary freight trains, such as the one above, may also be coal trains. Powered by a modern, efficient coal-burning locomotive, as are all C & E I freight and passenger trains, this train contains shipments of many items manufactured from coal and its by-products—materials such as coal tar pitch roofing, explosives for shells and bombs, chemicals, dyestuffs, nylon, plastics and a host of unrelated items such as pipe stems, perfumes, photo supplies, paints, creosote and that modern miracle-drug, sulfa. These are only a few of the ever-increasing number of products for which coal is a basic raw material. In addition, there are its familiar uses of providing heat and power to homes, factories and utility plants, and in the smelting of iron ore and its later conversion to steel.

Connecting the great coal fields of Illinois and Indiana with the important industrial area in and about Chicago, the transportation provided by the C & E I has become one of the important steps in the process of converting raw coal into its manifold useful forms.

CHICAGO & EASTERN ILLINOIS RAILROAD

The Chicago Line



Without a Hopper Car in Sight!



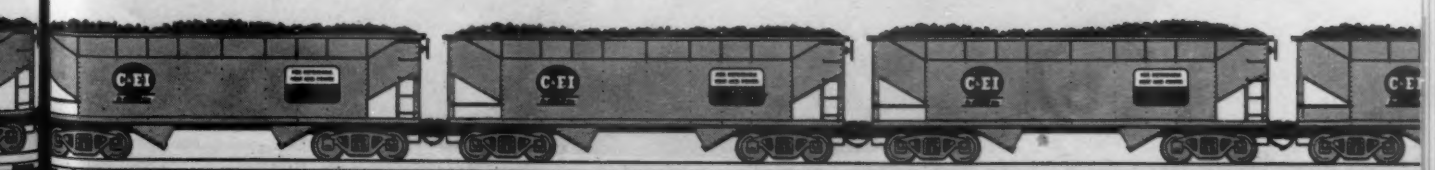
SPEED
C&EI
SERVICE
The CHICAGO Line

Since 1940 the coal tonnage handled by the C & E I has increased by 30 per cent. As part of our program to improve service to the coal industry of Illinois and Indiana, we are now accepting delivery of new, self-clearing hopper cars of modern design and have another fleet scheduled for delivery in time for the fall movement.

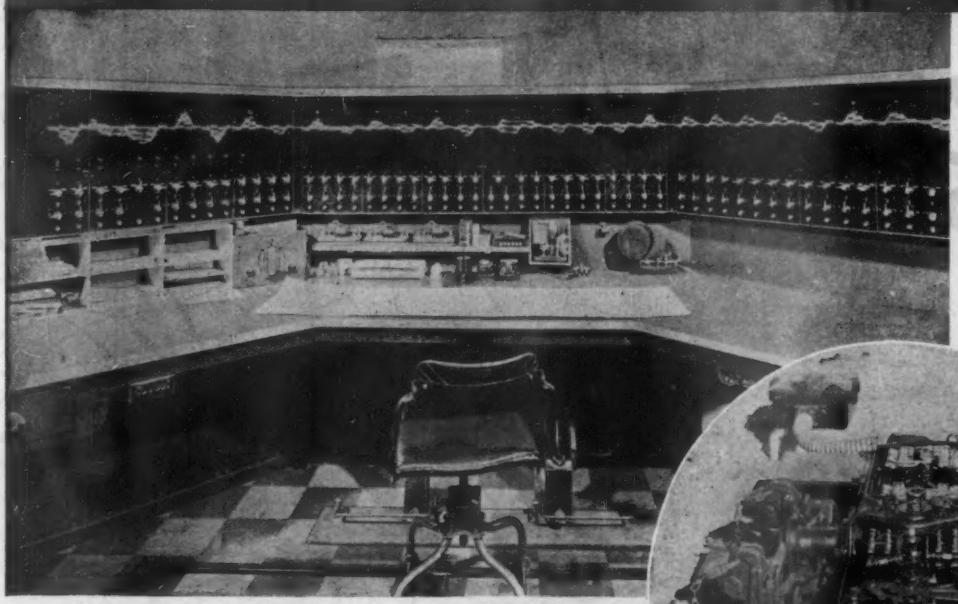
Looking forward to its key position in coal transportation after the war, the C & E I is already advanced in its plans for modernization—for improved service and the ultimate in efficiency in the handling of this important product.

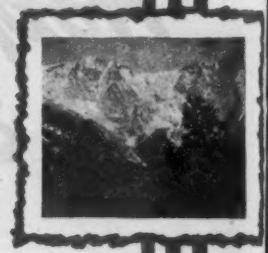
J. B. Ford, Vice-Pres., Traffic **H. R. Sampson, General Traffic Mgr.**

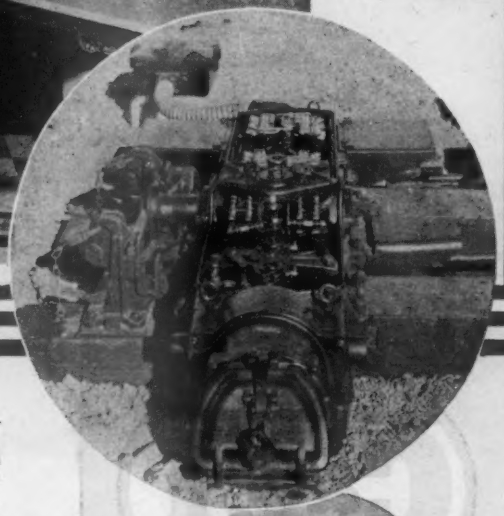
H. G. Foth, Coal Traffic Manager



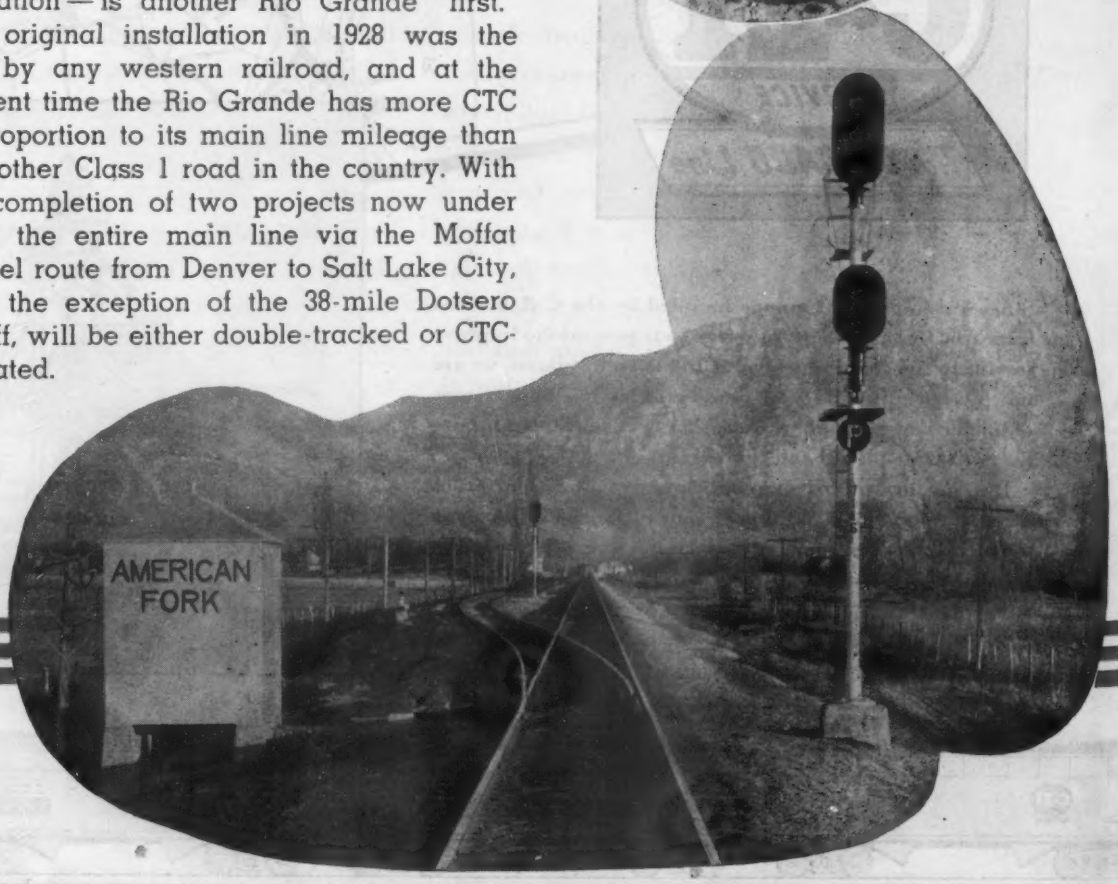
Rio Grande



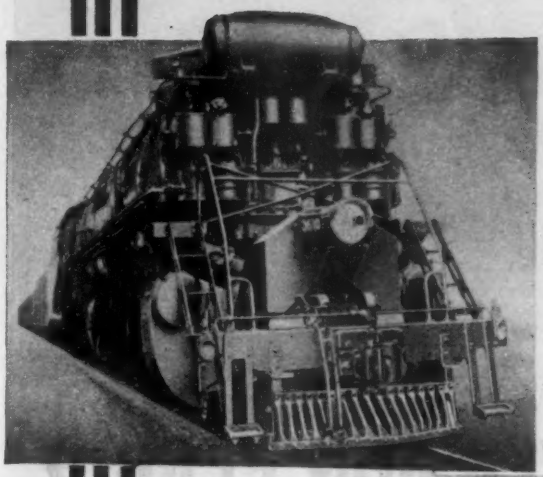




C.T.C. Centralized Traffic Control — the modern method of train operation — is another Rio Grande "first." The original installation in 1928 was the first by any western railroad, and at the present time the Rio Grande has more CTC in proportion to its main line mileage than any other Class 1 road in the country. With the completion of two projects now under way, the entire main line via the Moffat Tunnel route from Denver to Salt Lake City, with the exception of the 38-mile Dotsero Cutoff, will be either double-tracked or CTC-operated.

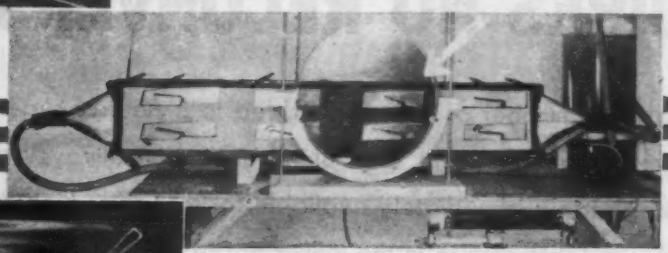


PROGRESS



RESEARCH

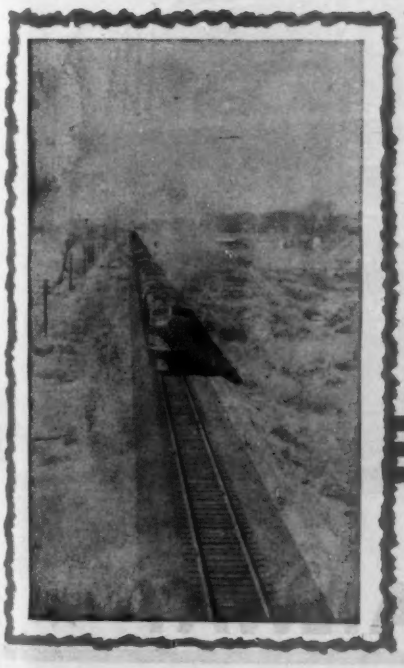
The unique Rio Grande research laboratory has pioneered in many research techniques. Pictured is one application of a new technical process utilizing the streaming double refraction method of fluid flow — here used to study the flow of gases in models of locomotive fireboxes. The method, developed by Rio Grande technicians, has attracted widespread attention and is being applied in research laboratories of the aeronautics, hydraulic, steel, and similar industries.

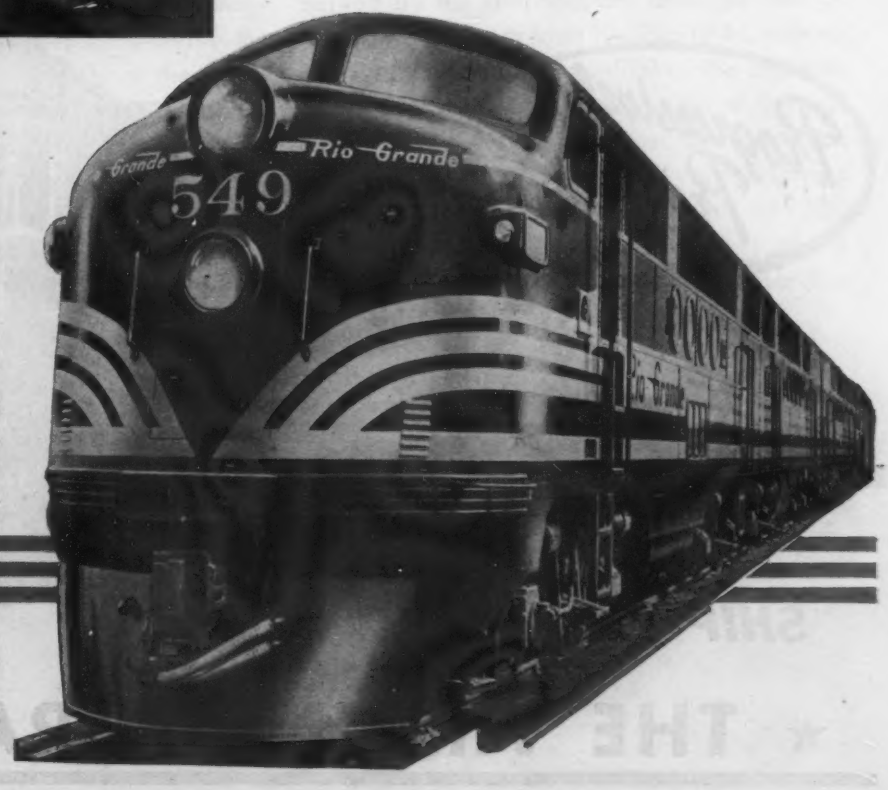




DENVER & RIO GRANDE WESTERN RAILROAD

Rio Grande Building • Denver, Colorado







REQUIRES NO RECONVERSION PERIOD

With a number of new units added to a fleet of super-locomotives—with its rolling equipment and plant generally always well maintained, the Virginian is immediately available for that same high degree of speed and dependable service in the movement of the goods, wares and merchandise of peacetime that it has furnished in the movement of the accouterment and implements of war.

Progressively Progressive



SHIP VIA—

★ THE VIRGINIAN RAILWAY ★

BESSEMER AND LAKE ERIE RAILROAD COMPANY



PLANNING AND PREPAREDNESS PROMOTE FREIGHT PROGRESS

FREIGHT Progress has nowhere been exemplified to a greater degree than in the rail and lake transportation of iron ore, both in volume and time required from mine to furnace. This results from improved facilities and equipment and co-operation of rail, dock and vessel interests since World War I. Larger and faster locomotives, steamships and handling machinery and larger cars under the direction of co-operative staffs of the operating companies with co-ordinating assistance when needed of an advisory agency of the carriers, enabled the handling of adequate tonnages, beyond any previous records, necessary for the prosecution of the war. In World War I there were regular and excessive delays to ore vessels at the Lower Lake ports from car shortages and other causes. Since Pearl Harbor there has been but one instance of such vessel delay when the cars assigned for an ore cargo were used under a priority for another war purpose. At the port served by this railroad, the average time of ore cargo dispatch from 1942 to 1944, with no delays, has been but one-fifth of the dispatch time of World War I, with delays of the sort above mentioned. The estimated transportation loss in ore tonnage by these former delays is the equivalent of 330 train-loads or 120 cargoes of the modern ore freighters now in service.

BESSEMER



CHICAGO OUTER BELT LINE

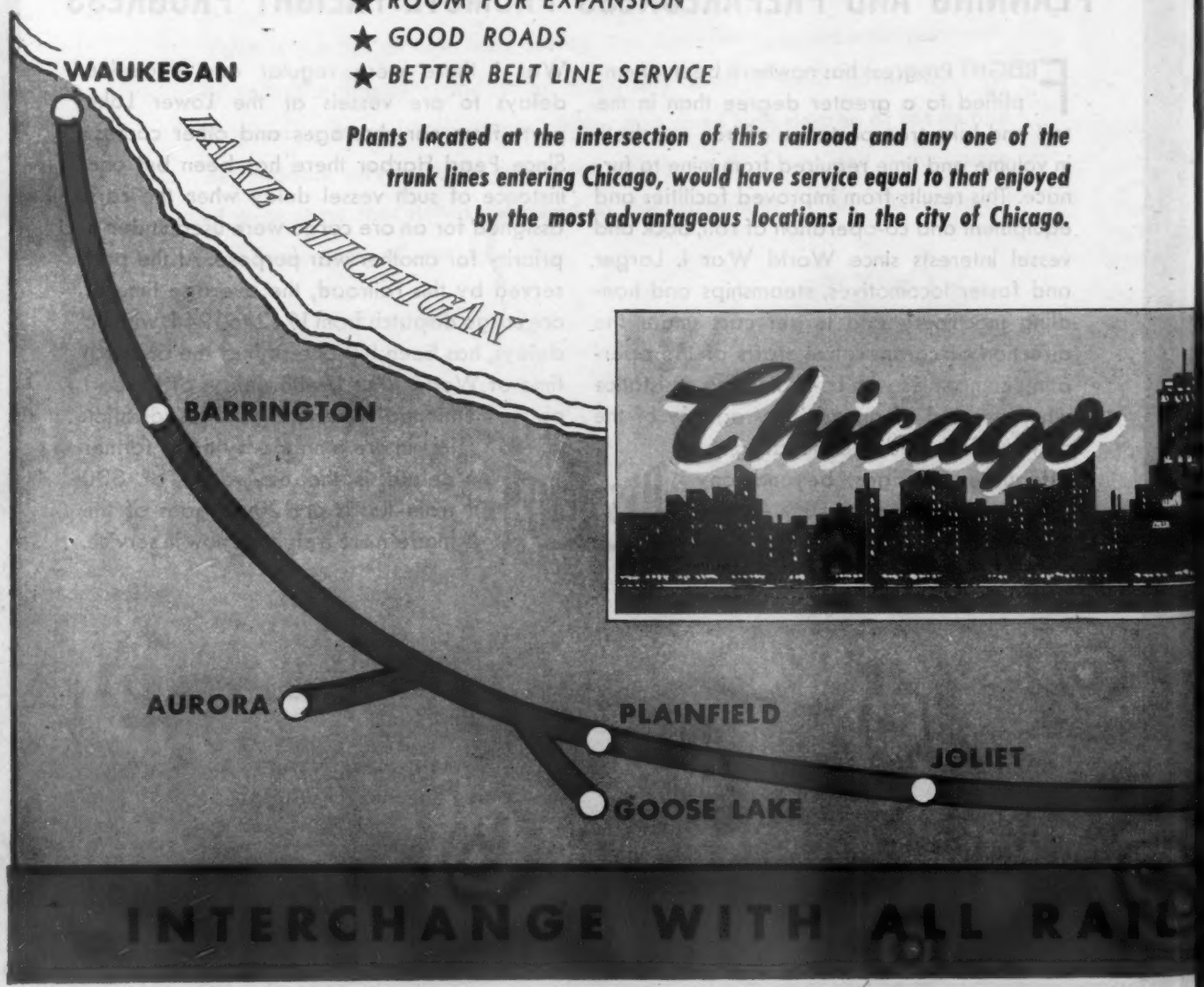
·AROUND CHICAGO-NOT THRU IT·

YOUR SHOULD BE

Industrial Development Generally Looks For These Advantages:

- ★ *LOWER TAXES*
- ★ *EXCELLENT LABOR MARKETS*
- ★ *LOWER LAND COSTS*
- ★ *PLEASANT COMMUNITIES*
- ★ *ROOM FOR EXPANSION*
- ★ *GOOD ROADS*
- ★ *BETTER BELT LINE SERVICE*

Plants located at the intersection of this railroad and any one of the trunk lines entering Chicago, would have service equal to that enjoyed by the most advantageous locations in the city of Chicago.



INTERCHANGE WITH ALL RAIL

POST WAR PLANTS
BUILT ALONG THESE LINES

Information is immediately available regarding many tracts of vacant property along this railway. Your inquiry is solicited and will receive prompt attention. For information write

J. B. DAVIES, *Vice-President*

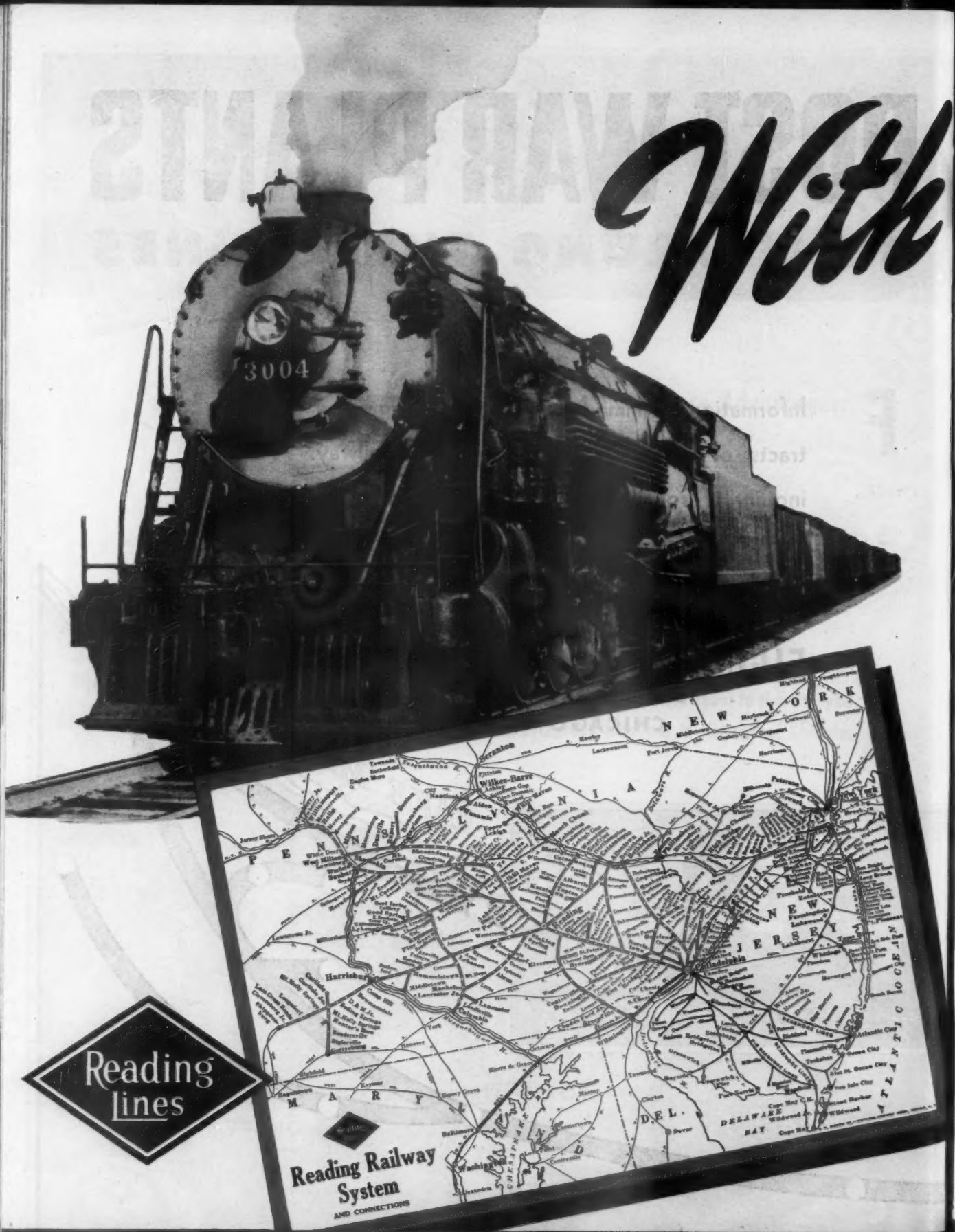
ELGIN, JOLIET and EASTERN RAILWAY

208 SOUTH LA SALLE STREET

CHICAGO 4, ILLINOIS

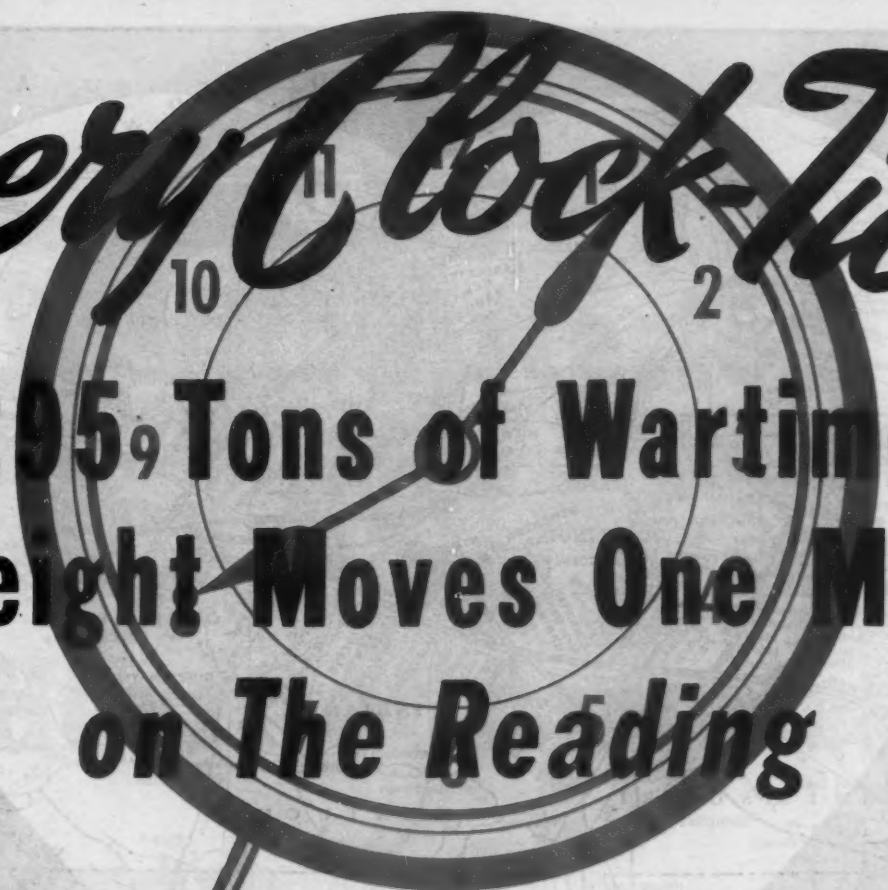


ROADS ENTERING CHICAGO



With

Reading Rai



Every Clock Tick

295 Tons of Wartime Freight Moves One Mile on The Reading

YES, 295 ton miles for each second of the year—over *nine billion* ton miles in 1944! This is The Reading's service to one of America's rich industrial sections and to the whole nation at war. Such unprecedented traffic is made possible by a "heads-up" policy of modernization and improvement; new equipment, better right-of-way, and the enthusiasm of The Reading family, over 19 thousand strong.

As America's largest anthracite carrier, The Reading transported over 15½ million tons of prepared coal in 1944, yet this was only 15.6 per cent of our total tonnage. Reading rails dominate and interlace a region which produces a good share of America's war material. Reading service through the splendid cooperation of shippers and receivers helps make that production effective.

iway System



Wabash

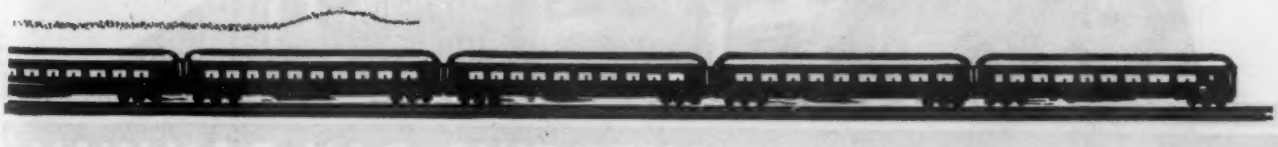
ONE OF AMERICA'S RAILROADS . . . ALL UNITED FOR VICTORY



Traffic Arteries keep the "Heart of America" strong

Just as the products and manpower of the Heart of America are vital to Victory, so are the throbbing arteries of Wabash transportation essential to the movements of these men and materials wherever required to serve our nation in war or peace.

Having direct connections with 66 other trunk-line railroads, Wabash also serves as a link through the "Heart of America" between East and West . . . North and South.

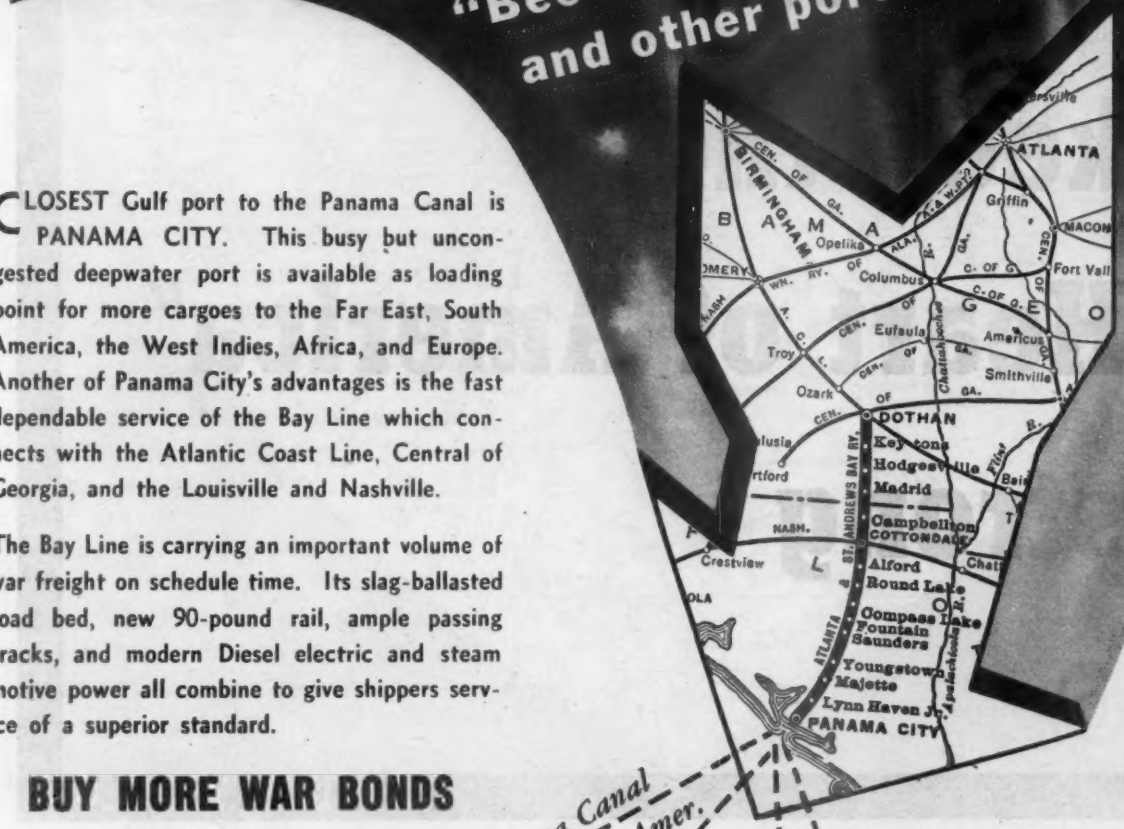


"THE BAY LINE"

Starts shipments on a "Bee Line" to Panama Canal and other ports...

CLOSEST Gulf port to the Panama Canal is PANAMA CITY. This busy but uncongested deepwater port is available as loading point for more cargoes to the Far East, South America, the West Indies, Africa, and Europe. Another of Panama City's advantages is the fast dependable service of the Bay Line which connects with the Atlantic Coast Line, Central of Georgia, and the Louisville and Nashville.

The Bay Line is carrying an important volume of war freight on schedule time. Its slag-ballasted road bed, new 90-pound rail, ample passing tracks, and modern Diesel electric and steam motive power all combine to give shippers service of a superior standard.



BUY MORE WAR BONDS



ATLANTA & SAINT ANDREWS BAY RAILWAY



DURING 1944, the Pere Marquette established new records in all phases of its operation — hauling freight tonnage surpassing even its record high of just one year ago.

Debt and interest charges were reduced for the third consecutive year and, despite the fact that increased costs of labor and materials resulted in lower net earnings, the future can be viewed with considerable optimism.

The growth of the Pere Marquette, like that of most railroads, is inseparably bound up with the communities it serves. And the establishment, since 1942, of more than two hundred new industrial plants along the Pere Marquette right of way is of special significance, for these new and diversified industries have contributed—and will continue to contribute—an increasing percentage of its total freight tonnage.

When final Victory comes, factors affecting the Pere Marquette indicate a prosperous new era in the making — particularly for communities along the Pere Marquette.

PERE MARQUETTE RAILWAY

PERE MARQUETTE

What you do with your money can wreck you (*and your Uncle Sam*)



BUY, BUY, BUY! Foolish people are doing it, *over*doing it. But sensible folks know that with every needless purchase—or every time you patronize a black market or buy above ceiling—you do your bit to force prices up all along the line. That's the way inflation gets a boost.



IT CAN HAPPEN HERE—again! Today, with fewer goods in the stores while incomes are high, the danger of inflation is greater than ever. Inflation is always followed by depression. What can you do to head off another depression? Buy nothing you do not really—*really*—have to have . . . today.



SAVE, SAVE, SAVE! That's the way to make America good for the boys to come home to. Pay up debts, put money in life insurance, savings bank, War Bonds. Every cent you save now helps to keep prices down—and when the war is won you'll have use for that nest egg you've laid away.



A HOME OF YOUR OWN, a better farm, a real vacation, something to retire on—these are things worth saving for. Store up your money now while prices are high. There's a time to splurge and a time to save: today, while money's coming in, is a good time—the *right* and patriotic time—to SAVE!

4 THINGS TO DO

to keep prices down and help avoid another depression

1. Buy only what you really need.
2. When you buy, pay no more than ceiling prices. Pay your ration points in full.
3. Keep your *own* prices down. Don't take advantage of war conditions to ask more for your labor, your services, or the goods you sell.
4. *Save.* Buy and hold all the War Bonds you can—to help pay for the war, protect *your own* future! Keep up your insurance.



A United States War message prepared by the War Advertising Council; approved by the Office of War Information; and contributed by this magazine in cooperation with the Magazine Publishers of America

TO COMPANY PRESIDENTS:



Here's Another BIG CHANCE FOR YOU to "Pass the Ammunition!"

Today—thanks largely to you and other industrial executives—22,000,000 civilian workers are speeding victory and achieving postwar security through the Payroll Savings Plan. Over 60% of the 6th War Loan subscriptions came from this source—and, between drives, this forward-looking plan has been responsible for 3 out of 4 War Bond sales!

Good as this record is, the Payroll Savings Plan can be still more effective. Believing this can best be accomplished by giving Bond buyers a definite idea of the many benefits accruing to them, the War Finance Division has prepared a variety of active aids for employee education.



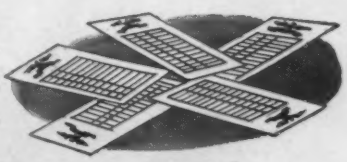
This new "ammunition" includes:

a—An entertaining, swift-paced moving picture, graphically showing the importance of buying—and holding—War Bonds.



b—An interesting, easy-to-read booklet, explaining how War Bonds may be accumulated to provide education for children, homes, retirement incomes, etc.

c—Attractive, handy War Bond envelopes, enabling Bond holders to note each separate purchase—and the specific purpose for which each Bond or group of Bonds was bought.



Passing this particular ammunition requires that you reappraise your own company's Payroll Savings Plan. Have your own War Bond Chairman contact the local War Finance Committee—today! They will welcome the chance to discuss this new program with you.

The Treasury Department acknowledges with appreciation the publication of this message by

RAILWAY AGE

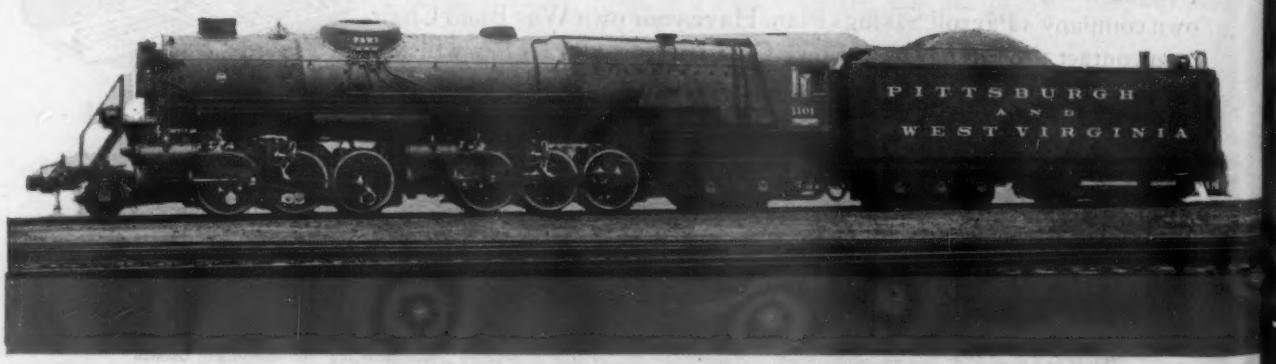
★ *This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council*



In a chain of Railroads between the East and West, welded into unified operation, the Pittsburgh and West Virginia Railway forms the central link.

Serving the vast steel and coal industries of Pittsburgh, together with ever-increasing demands upon its facilities in the transportation of goods to our armed forces as well as our allies, has given the Pittsburgh and West Virginia Railway the opportunity to prove its efficiency in fast freight transportation.

The Pittsburgh and West Virginia Railway pledges its continued efforts toward speedy Victory.



UP AND DOWN THE COAST LINE

THE SOUTH OFFERS INDUSTRIAL STABILITY

By Thurman Sensing

Director of Research, Southern States Industrial Council, Nashville, Tenn.

We have made the statement a number of times during past weeks that the South offers the best opportunity for commercial and industrial development of any region of the land.

We have called attention to the fact that the South has always had all the natural assets necessary for sound prosperity and except for the ravages of war throughout the region some eighty years ago, the South would all along have been in the vanguard of the Nation's economic development.

* * *

We have shown that whereas the South is still below the national average in its economic development it is now gaining at a more rapid rate than the nation at large.

Perhaps there are still those who do not have this same faith in the economic future of the South.

* * *

These fifteen Southern states comprise one-third of the nation's land and contain one-third of the nation's people. On a pro-rata basis, therefore, these same states should contain one-third of the nation's business concerns, whereas it will be noted they contain only 24 per cent.

This is not the important point, however. The fact that stands out is that while the South contained 24 per cent of the nation's business concerns in 1942 it only suffered 12 per cent of the nation's industrial and commercial failures in 1942.

* * *

The conclusion to be drawn from these figures is that the average chance of success for business in the South is twice as good as the average for the nation.

The favorable comparison of business in the South as contrasted with the nation not only holds good for 1942, it was also true for the two previous years.

* * *

The greater stability of Southern business is quite evident from this record.

* * *

The businessman or the industrialist who wishes to go into business or develop an industrial plant, and the investor or banker wishing to finance such developments would, therefore, do well to realize that the South offers the best opportunity for the success of such enterprises and the safety of such investments.

Once this fact is fully realized by the people of this nation the trend of capital and industrial development Southward will occur with accelerated speed.

If you are interested in industrial plant sites or distribution facilities in the Southeast, we shall be glad to recommend suitable locations. Our research staff is also available for comprehensive studies with respect to industrial possibilities in our territory. Inquiries will receive prompt and confidential attention. J. M. Fields, Assistant Vice-President, Wilmington, N. C.

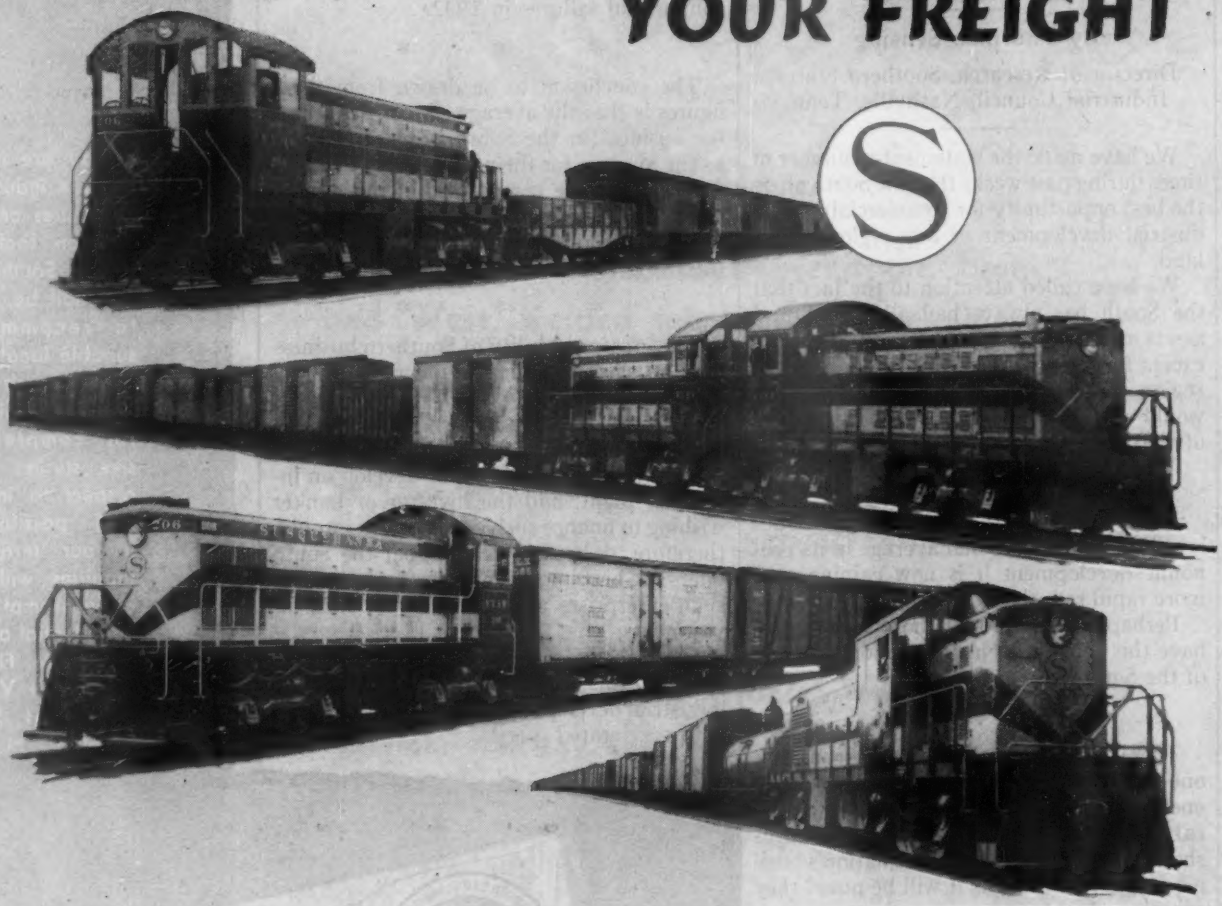


ATLANTIC
COAST LINE
RAILROAD



SERVING AMERICA'S NEW FRONTIER

LET THE SUSQUEHANNA HANDLE YOUR FREIGHT



LOOKING forward to the days when war traffic will no longer be the dominant issue, the Susquehanna Railroad suggests its Edgewater terminal as the most advantageous industrial location in the New York metropolitan area.

The Susquehanna's connections give the shipper access to ALL trunk lines, an advantage worth considering in your post war planning.

NEW YORK, SUSQUEHANNA AND WESTERN RAILROAD

HENRY K. NORTON, TRUSTEE

140 Cedar Street, New York, N. Y.

A B & C RAILROAD

Serving the Greater INDUSTRIAL SOUTH

THE war has accelerated the growth of the South, especially the territory served by the A. B. & C. Railroad which is rich in minerals and industrial resources. The Development Department of the A. B. & C. Railroad will help you find suitable industrial locations, farms or orchards in the territory served by its lines in Georgia and Alabama. Call, write or wire, Development Department, 26 Cain Street, N.W., Atlanta, Ga.



Applied Geometry...



IN transportation, as in geometry, a straight line is the shortest distance between two points. Between East and West, whether the distance be measured in miles or in minutes, the Toledo, Peoria & Western is the *short route.*

Intercepting most of the largest eastern carriers far southeast of the congested Chicago terminals, and many of the major western lines miles southwest of that area, the T. P. & W. speeds vital war-time freight over a straight east-west route for delivery to connections hours and miles further advanced than traffic moving via other routes.

The friendly personnel of the T. P. & W.'s 22 conveniently located traffic agencies are always ready to help you solve your transportation problems with unbiased counsel based on expert knowledge of rates, routes, and schedules. For detailed information about service over T. P. & W.'s short route between East and West phone or write the nearest T. P. & W. representative.

C. R. Barnewolt, Traffic Manager

THE PEORIA ROAD

TOLEDO, PEORIA & WESTERN RAILROAD

GENERAL OFFICES: UNION STATION, PEORIA 2, ILLINOIS

THE SHORT ROUTE BETWEEN EAST AND WEST

FREIGHT PROGRESS

is the Result of the EVERLASTING QUEST—



Test tubes and the odd-looking machines below—what do they have to do with the progressively greater freight handling capacity of modern railroads?

More than you would ever dream!

On the Norfolk and Western, the search for better materials, improved facilities, better operating methods and improved safety goes on day after day, year in and year out.

In the railway's modern, completely equipped physical and chemical laboratories, and in the field, N. & W. chemists, physicists, metallurgists and mechanical experts make approximately 30,000 scientific tests and analyses a year of the steel that goes into locomotives, cars, rails and bridges; concrete, ballast, paint, lubricating oils, signals, brakes, draft gears, coal—and thousands of other items.

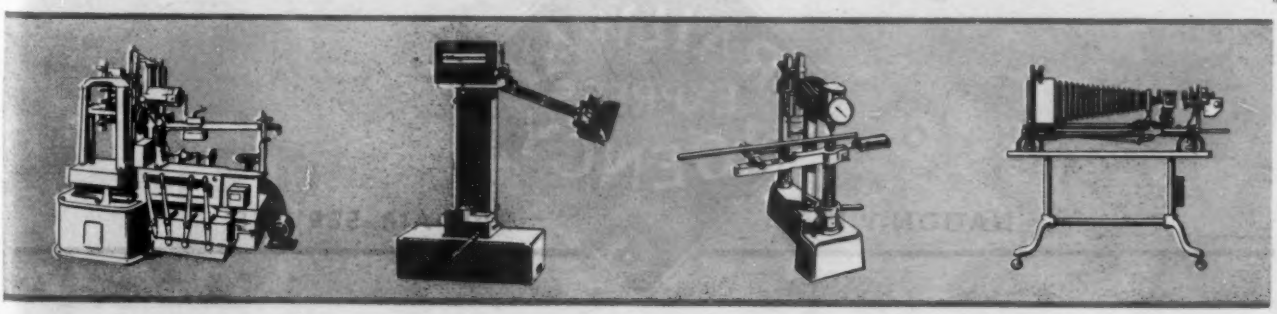
This "everlasting quest" adds up to continuous improvement in every phase of operations—a constant rise in the efficiency curve. That means freight progress. Here's proof:

With more modern, efficient steam locomotives, the Norfolk and Western moved 59 per cent more freight in 1944 than in 1918, and hauled it in better cars that made 62 per cent more mileage at 61.2 per cent faster freight train speed.

America's railroads are alert to their opportunities. By constant research, study, improvements and enterprise they will continue to forge ahead when Victory is won—as the safest, most efficient and progressive transportation system in the world.

Norfolk and Western
RAILWAY

PRECISION TRANSPORTATION





Keeping The Nation's Goods Moving

Modern war is insistent in its demands for supplies. These must not only be mined and grown and made. They must reach the fighting fronts and the home fronts in a fast and constant flow. To maintain this ceaseless current is a tremendous responsibility, but the railroads have carried the load. Their Express and freight services, geared for performance unparalleled in their history, are meeting wartime needs. When the war ends, the lessons taught by these times of stress will progress still further the servicing of the goods of peace.

RAILWAY EXPRESS AGENCY

NATION-WIDE RAIL-AIR SERVICE

SCHEDULED

THE BELT RAILWAY CO. of CHICAGO

transfer service is given your traffic when it is moved through the Chicago Gateway by The Belt Railway Company of Chicago. We offer this fast, on-time service which today is vital in the war effort and which will be essential in a prosperous tomorrow.

Most modern classification yards, outlying terminal yards, complete freight handling facilities and direct interchange with road-haul carriers in their terminal yards make it possible for The Belt Railway Company of Chicago to schedule a transfer service between trunk line carriers which coordinates their train arrivals and departures, thereby providing through uninterrupted service, so necessary in handling effectively both war and peace-time traffic.

F. J. WASSON
General Traffic and Industrial Manager

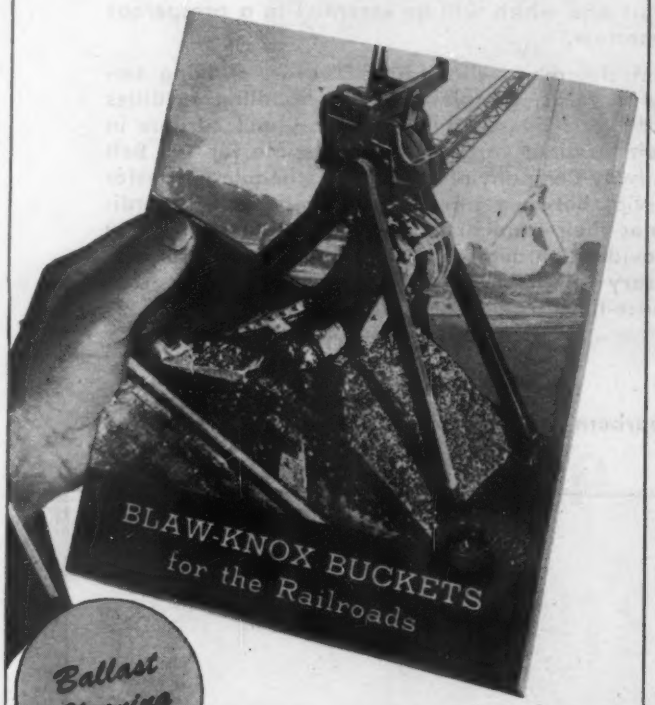
Dearborn Station, 47 West Polk Street, Chicago



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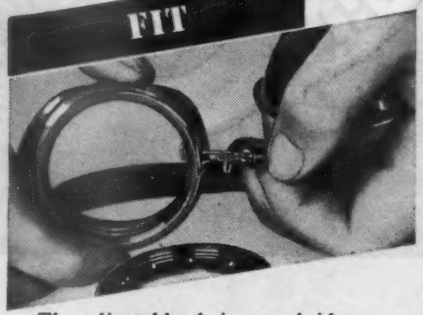
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Model RR50, one of more than 20 Willson Cup Goggles, meets Federal specifications for worker eye protection in chipping, grinding, riveting, sledging, snagging. The thick Super-Tough lenses of heat treated glass have high frontal impact strength. Reinforced plastic eye cups give side protection.

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The adjustable chain nose bridge permits spacing of the specially shaped eye cups for proper fit. Adjustable headband holds cups snugly against the face. No pressure on nose, no high spot pressure on face when properly adjusted.

COMFORT



Smooth plastic eye cups with rolled edges are specially shaped to left and right eye socket contours so they always feel comfortable. Direct or indirect cup ventilation and lens ventilation assure seeing comfort and minimize lens fogging.

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INSPECTOR'S LANTERN No. 46-S

Here is the finest inspector's safety lantern on the market. Large fixed handle for carrying over the arm also provides two hand grips. Polished 7-inch reflector is fastened around twin-bulb reflector and may be removed and replaced easily. Kick-out bulb sockets and spark-proofed guard meet the highest safety requirements. Approved for safety by Underwriters' Laboratories, Inc., and the U. S. Bureau of Mines for safe use in methane gas and air mixtures.

HANDY SAFETY FLASHLIGHT No. 17-S

A 1500 candlepower . . . 3-cell flashlight that's rugged and dependable. Fits in the palm of the hand, on belt clip or stands on a flat surface. Has all the famous Justrite Safety Features "sealed-in" a sturdy plastic case. A light that's won instant approval with railroad men.



Model No. 17-S

APPROVED FOR SAFETY

All the lights shown here have met the safety requirements of Underwriters' Laboratories, Inc., and the U. S. Bureau of Mines for work on hazardous locations.



Model No. 44-S



RAILROAD AND INDUSTRIAL TYPE SAFETY LANTERN

(*Left*) Has movable steel, spark-proofed guard which serves as a stand and allows the light to be directed at any angle. Glass globe optional.

ALL-PURPOSE SAFETY LANTERN No. 44-S

A rugged, twin-bulb safety lantern for every purpose. Fixed guard protects the face of the lantern. Movable guard-base and adjustable handle make it "tops" in utility light.

Ask your supplier about Justrite Safety Products

JUSTRITE MANUFACTURING COMPANY

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JUSTRITE *Safety Products*

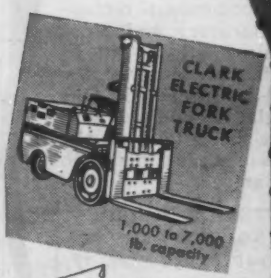
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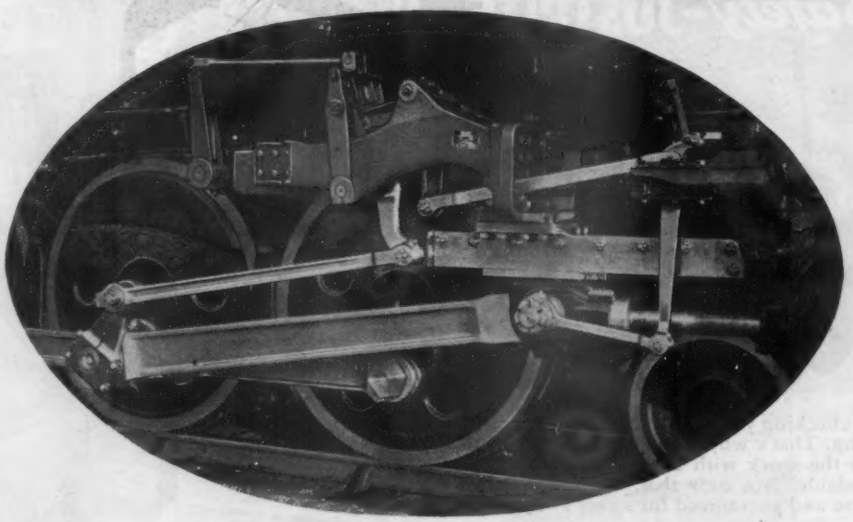
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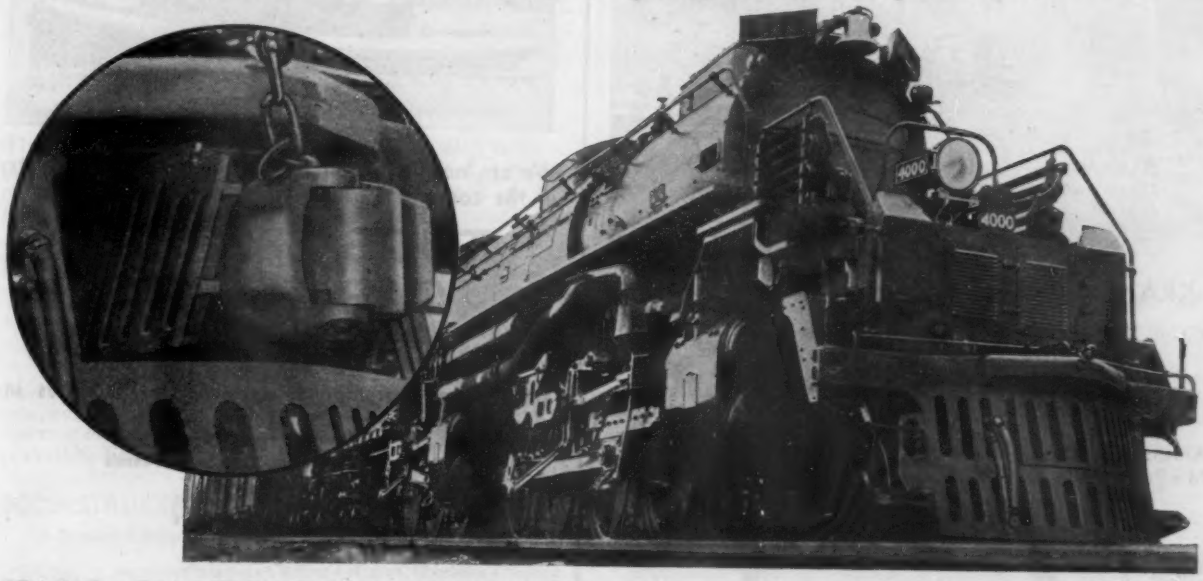
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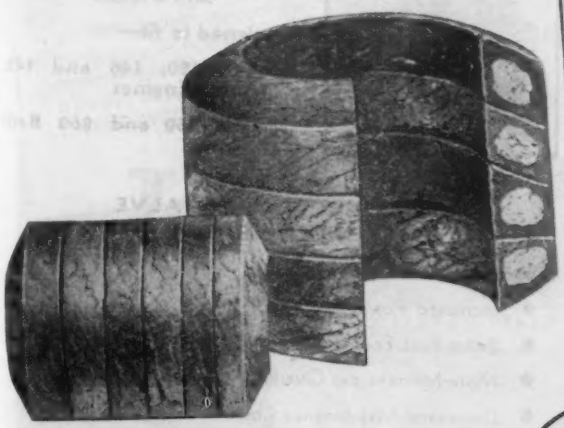


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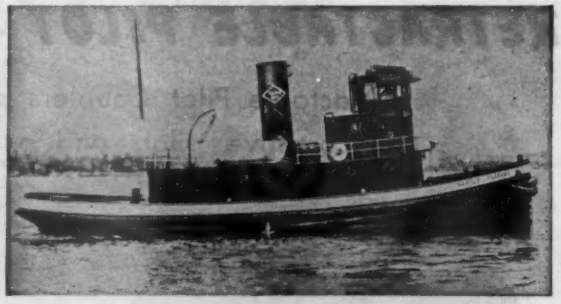
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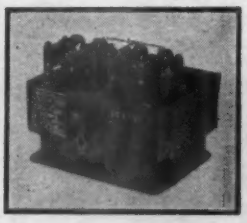
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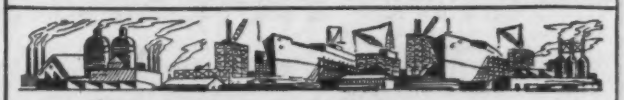
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